

**ULSTER  
MULTI-  
PURPOSE  
DIESEL  
RAILCARS**

See Page 3



VOL. LXXVIII No. 2026

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LONDON, JANUARY 25, 1958

**U.S.S.R.  
BUS  
AND  
COACH  
SERVICES**

See Page 5

PRICE NINEPENCE

**Internal Combustion Triumph**

ATMOSPHERE makes an extraordinary difference in human affairs. Writing in his diary 46 years ago the ill-fated Captain Robert Falcon Scott, perhaps already sensing that for his expedition the point of no-return had been passed, thought the wastes of snow and ice at the South Pole "a terrible place." This week, however, the atmosphere at the South Pole camp has been reported as resembling that of an Austrian ski resort. The triumph first of Sir Edmund Hillary and now of Dr. Vivian Fuchs in reaching the pole by their different methods is a matter for congratulation. But it is also a reflection of the advance of the internal combustion engine since 1912 that these things are possible with comparative ease. Aircraft take people to and from base camps and the Pole with something resembling the casual air of the country bus; Hillary's great dash was made with slightly adapted Ferguson tractors; drums of B.P. fuel figure in radio-transmitted photographs as a commonplace. The human spirit behind the endeavours is the same as ever, but misery and disaster have been transformed into surroundings where scientific research can be pursued profitably thanks to half a century of progress in the motor and aviation fields.

**Government Still Firm**

MINISTERS have been at pains to dismiss the fears, created by Mr. Thorneycroft's resignation and that of his Treasury colleagues, that the Government was weakening in its campaign to protect the pound and control inflation and the cost of living. Whilst one applauds these resignations on a matter of principle—that next year's expenditure must be no higher than this year's—one may accept the majority argument that government requires a weighing of factors beyond the strictest financial orthodoxy. Moreover, the new Chancellor seems imbued with the pressing requirements of the situation. Mr. Heathcoat Amory has given an assurance that "the tough, drastic, deflationary policies that the Government adopted last September will be continued without relaxation until success has been achieved," adding that there is no soft way through our inflationary difficulties and that whatever steps are taken are bound to hurt. In asking those concerned to pause and reflect he repeated the warning of his predecessor that "another round of wage increases such as we had last year would spell disaster to the prospects of beating inflation." And so, for that matter, would any weakness on the part of the Government. Meanwhile, there are signs of sanity. The London bus workers have voted decisively against industrial action in support of their rejected demand for another 25s. a week and in favour of its reference to a committee of investigation. But demands from other quarters are accumulating. The miners, who are certainly—and rightly—not underpaid, want concessions estimated to cost £30 million and to add some 3s. a ton to the price of coal, and even the dockers, who can earn £10 a day on piecework and are not unknown to average £30 a week, are still dissatisfied; from them a new pay claim is said to be on the way. The real tussle has yet to begin.

**Access to London Airport**

METHODS of providing direct rail communications between the centre of London and London Airport have been the subject of inquiry by a working party which was set up in 1956 by agreement between the Minister of Transport and Civil Aviation, the chairman of the British Transport Commission and the two airway corporations. Their task was to formulate a detailed scheme for the provision of a rail link between London Airport and the centre of London and to assess the economic prospect. Discussions concerned solely proposals for a new over-ground line, such as from Victoria alongside the Southern Region tracks to the airport via Barnes and Feltham, leaving the question of the so-called monorail to be dealt with in the proposals submitted by interested companies.

## CURRENT TOPICS

A first report has been presented and the three chairmen, at the Minister's request, are continuing to explore the possibilities. Any rail link between the West End of London and London Airport would be in addition to the action which is being taken to improve access by road. The building of the Cromwell Road extension is expected to reduce travelling time to Cromwell Curve to between 30 and 35 minutes, as against about 40 minutes at present. When the South Wales radial road is built, the road time will be further reduced. Over three million passengers passed through London Airport in 1956. By 1970 it is estimated that the figure will have increased to 12,750,000 and during busy periods the airport may be handling 4,700 passengers an

**Radar Speedmeter in London**

LAST Monday, the Metropolitan Police brought into use in London an electronic speedometer to aid detection of speed-limit offences. The device will be used at selected sites, mainly at accident black spots and where drivers are known to exceed the speed limit. The new equipment, which is of American origin similar to that introduced last year in Ulster and Lancashire, comprises a portable radar set directed at approaching traffic, the signals from which are shown directly on a meter as miles per hour. A repeater meter set up at a distance from the first can be connected to the same radar for corroborative purposes. After lengthy experimental use in London and

of the parent company the production capacity at Kingswood has assisted in meeting the demands for automotive brakes and control equipment. The brake division has carried out successful development towards simplified maintenance procedure. The signalling and colliery division has had its best year for production and orders which include those for Westronic remote control equipment for British Railways. Record output and great technological advances have been scored by the rectifier division. Finally the chairman pays tribute to the work of management, staffs and employees and the heavy responsibility carried by Mr. M. W. Shorter, the managing director.

**Pageant of Industrial Britain**

THOUGH produced as a record of the company's achievements for circulation to members of the company, 1957 Book of the Year, published by Shell-Mex and B.P., Limited, is worthy of more general attention for providing a pictorial record of contemporary industrial Britain. A brief survey of national and Shell-Mex and B.P. achievements in 1957 is followed by well-illustrated descriptions of progress in three major industries—steel, aviation and agriculture. With its great coal-using tradition, it is surprising to learn that the steel industry is the largest single purchaser of fuel oil in Britain, having used in 1956 1½ million tons out of a total consumption (excluding refinery processes) of 6½ million tons and recorded a 121 per cent increase over the 1948 figure. In agriculture, there is far more to the oil company's contribution than supplying fuel and lubricants for tractors and machines; pesticides, fungicides, soil fumigants, weed-killers and fertilisers of ever-increasing range and scope permit more marginal land to be made productive and higher productivity from existing fields. In 1957 something over 300 million gallons of fuels, oils and chemical products was delivered to the British farming industry.

**The Engineer and Management**

ENGINEERS cannot shrug off responsibility for failures in industrial and political management. Since industrial civilisation is largely the result of engineers' work and invention, it is for them to play a more active part in solving mankind's problems of management and organisation, according to Sir Ewart Smith, who was speaking at the Institution of Civil Engineers recently. Sir Ewart, who is vice-chairman of Imperial Chemical Industries, Limited, and himself an engineer, was delivering the Graham Clark lecture on "The Engineer and Management" to members of the Institutions of Civil, of Mechanical, and of Electrical Engineers. He believes that one of the reasons why engineers are not making a greater contribution to top management in all spheres is that the desperate shortage of technologists is such that most are confined to specialist jobs. Study of the engineer's actual contributions in the field of management showed that 40 per cent of companies had boards with no technically qualified member, and that of all directors of engineering companies, fewer than 22 per cent had technical qualifications, and of these only three-quarters were engineers. The position was far worse in industry generally, including services such as transport, and if we looked at the national level of management—Parliament—it was rare to find even one qualified engineer in a ministerial post. Outlining the need for broader education, better leadership and more enlightenment at all levels, Sir Ewart asked, "Who, taking an objective view, can feel that as a nation we are today as strong as we might be in a material sense and, at the same time, happy in our spirit?" He thought that failure over the past 50 years to expand technological and managerial education was a major cause of our decline from pre-eminence in industrial and economic strength to about sixth place among the nations in income per head. But, as in the past, we could save ourselves by exertion and, in addition, lead the world to a fuller life by our example.

## LEADING FEATURES IN THIS ISSUE

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hour, with an occasional peak of nearly 6,000 in the hour, even after allowing for the transfer of Channel Island services to Gatwick.

**Revived Interest in Alweg**

WORDS sometimes acquire popular use and the blessed word "monorail" seems to have done so in respect of London Airport access. The original scheme developed into the suspended system evolved by International Monorail, Limited, and described in MODERN TRANSPORT of February 4 and 11, 1956. But at the moment the Alweg system (described in its original two-fifths full scale form in our issue of December 20, 1952) appears to hold the greatest interest. Backed by a powerful consortium of industrialists for whom the veteran Sir Alfred Bossom, M.P., is spokesman, Air Rail, Limited, proposes use of the Alweg system with the addition that the individual cars can run as road coaches to collect passengers in the City and West End, make their fast journey, say, from Cromwell Curve into the airport through the road tunnel as Alweg cars, and then distribute the passengers to their aircraft, providing customs and immigration controls can be complied with. The original Alweg design had a quaint resemblance to the Lartigue monorail opened in 1888 between Listowel and Ballybunnion in Ireland, the A-shaped steel supports of the latter, with a running rail on top and two lower guide rails being replaced by a top bearing surface on a reinforced concrete wall, four guide strips below and two conductor rails. This "heptorail" has now been simplified, although hardly to a monorail, and the vehicles improved. The rail does not, of course, project into the passenger compartment as on the steam-operated Irish venture which closed down in 1924. On a visit to the demonstration line near Cologne last week Mr. G. R. H. Nugent, Joint Parliamentary Secretary, Ministry of Transport, was obviously greatly impressed.

examination by the National Physical Laboratory, the Metropolitan Police Commissioner is satisfied that the instrument is accurate. This conviction appeared justified when we saw the speedmeter demonstrated on Chelsea Embankment recently. Well-spaced approaching vehicles caused steady readings on the meter from distances of up to about 100 ft. and the accuracy of the readings was confirmed by runs past at set speeds by a police car with a freshly calibrated speedometer. Bunched traffic caused some hunting of the needle, but even under these conditions the general speed of a traffic stream was clearly discernible. Insofar as the radar speedmeter will be used to detect excessive speed that might contribute to road accidents, no right-minded person will take exception to it. But apparently it is less likely to put a finger on that particular pernicious offender, the thruster in traffic who causes many accidents or creates the climate or conditions in which accidents happen, than the mere indulger in excessive speed on fairly open roads. A pity.

**Westinghouse Group Success**

IN his statement to shareholders of Westinghouse Brake and Signal Co., Limited, in connection with the 77th annual general meeting, Captain A. R. S. Nutting, O.B.E., M.C., the chairman, records orders during 1956-57 greatly in excess of the previous year's record; dispatches reached an exceptionally large total. Trading profit was £2,143,466, an increase of £410,344 over the previous year; there is a general reserve of £1,450,000 and the carry-forward is £374,493 after paying a dividend of 10 per cent. The success story includes the conversion of a substantial loss by Douglas (Kingswood), Limited, into a small trading profit; other subsidiary companies appear to have done extremely well and the future of the group seems to hold great promise. In the divisions

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The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

### Coal and Transport

COAL, it is no exaggeration to say, not only was the foundation of the industrial revolution in Great Britain, and the main support of our development for nearly two hundred years, but was the backbone of mechanised transport facilities. At the beginning of the industrial era the navigable rivers represented the limits of bulk transport at reasonable prices. Mineral lines and tramways linked certain collieries to points of shipment from Elizabethan times onward, but the tide of progress flowed swiftly from the time, now just on two centuries since, when Charles Brandling obtained a private Act of Parliament to assist in the building of a railway to a colliery near Leeds in which he was interested. Almost simultaneously Francis, Duke of Bridgewater, was concerned in building a canal from his mines at Worsley to Manchester and, with its opening in 1761, the canal era began. Seven decades passed before the steam railway, brought to fruition through the high price of horse fodder during the Napoleonic wars and first exploited with commercial success in 1812 on that same railway for which Brandling had obtained the original Act in 1758, began a new economic revolution which enabled coal to be distributed cheaply and readily to places far from the waterside. Coal and the compound marine engine enabled the steamship to make a worldwide revolution in distribution.

### Decline for Motive Power

BOTH on land and water coal has passed its peak of importance as a source of motive power. For well over a generation oil has steadily displaced coal in ships' bunkers, first for steam raising and later in direct propulsion, until now only a small proportion of newly-built tonnage is coal-burning. In the last two years marked inroads into steam propulsion on British Railways have been made by the diesel and electric traction which are integral to the railway modernisation plan; the suppression of steam for motive power will go on inexorably, even if spread over a number of years. The coal industry, which two decades ago fought against railway electrification because it would reduce demand, now welcomes the change, apart from its break with tradition. The departure of the steam locomotive will mean a saving of over 12 million tons a year of best-quality large coal, which, owing to the mechanisation of the mines, is becoming increasingly scarce. In recent years Britain has had to find the balance of requirements for household and railway consumption by importing large coal at heavy cost in foreign exchange. Lord Mills, Minister of Power, at an Institute of Transport luncheon last autumn therefore welcomed the reduced railway demand for large coal; electric power houses can, of course, use small and low-grade coal, apart from nuclear possibilities.

### How Coal Moves

NEVERTHELESS, as Mr. W. L. Kelly, of the National Coal Board, showed in a recent paper to the Railway Students Association, the forecast is that the demand for coal as fuel will rise in the next 15 years. By 1970 N.C.B. plans should produce 250 million tons a year. In 1956 the total available for transport was 208 million tons out of over 220 million tons produced. Of this, 152.76 million tons moved by main-line railway (of which 123.29 million went inland, 21.82 million for coastwise shipment and 7.6 million to ports for exports and bunkers); 11.45 million tons moved by N.C.B.

private railway; 3.77 million by inland navigation; 33.86 million by road; and 6 million tons by other methods such as ropeways. Round trip times from colliery to port of less than one day are achieved by the National Coal Board's own 20-ton hopper wagons on the north-east coast; over 30,000 are in service on the Board's own railways. Wagon statistics for British Railways now include the benefits of nationalising private owners' wagons and of centralised overall control for inter-regional transfers. That 34 million tons are shifted by road underlines the strides made by road transport as a coal-moving agency, taking one-fifth of all coal traffic moving into the inland market. But three-fourths of N.C.B. output goes on British Railways; the B.R. figures of originating tonnage (167 million) include also imported coal and the conveyance of coastwise coal from port to inland destination; they represent about 60 per cent of all freight train traffic carried. Weekly wagon loadings in mid-winter approach 300,000 from 900 collieries and opencast disposal points; 34 million tons moves in a normal week, 34 million in the bull week before Christmas, and daily wagon requirements are up to 60,000. This volume of traffic needs a full-time transport organisation which the N.C.B. established as part of its marketing department.

### Support for Public Transport

STANDING liaison committees between N.C.B. and B.R. representatives have stood the test of 10 years of co-operation and there are obvious economies stemming from the large-scale organisation of coal mining and rail transport. Successful emergency arrangements can be quoted, too, such as import of 25,000 tons in nine days via Cardiff and Barry for the West Midland Gas Board, that prove efficiency. The contact between transport agency and coal producer begins with the chairman and board members and goes down to lower levels to cover every aspect of traffic needs. Mr. Kelly mentioned that there was still much to learn about wagon movements and expressed great interest in the research into their electronic recording for tracing individual transits and for the light it would throw on wagon circulation in general. N.C.B. research included use at collieries and shipment points of belt conveyors and experiments on moving coal hydraulically through pipelines. He also paid a tribute to the work of the transport users' consultative committees, on which the National Coal Board is liberally represented, especially in unmasking problems such as are produced by passenger and freight transport going more and more into private hands, thus threatening the public transport industry and creating an excess of transport in one place and a scarcity in others. As a large user of transport the Coal Board could not be indifferent to the fact that 84 per cent of rail freight traffic was coal and other raw material and only 16 per cent derived from all other products of industry, commerce and agriculture—an unhealthy lack of balance which may be redressed by modern operating and commercial practice. Mr. Kelly felt the public might not realise until it was too late the inconvenience it would eventually suffer through failure to support the railways and other public transport media; the transport users' committees might here play an increasingly valuable part in interpreting public interests to the transport agencies and in bringing the national pattern of transport into a proper balance.

### Forthcoming Events

January 25.—Permanent Way Institution, Conversazione. At 222 Marylebone Road, N.W.1. 5.30 for 6 p.m.  
Light Railway Transport League. Paper by Mr. F. Church, "More Austrian Tramways in Colour." At 153 Drummond Street, N.W.1. 3 p.m.

January 27.—Omnibus Society. Annual general meeting and presidential address by Mr. Raymond W. Birch. At Victoria Coach Station, Buckingham Palace Road, S.W.1. 6.45 p.m.  
Light Railway Transport League. Paper by Mr. W. H. Bett, "The Tramways of the Black Country from a Ticket Angle." At Exchange and Engineering Centre, Birmingham. 7.30 p.m.

January 28.—Institute of Transport (Leeds). Discussion opened by Mr. J. R. Hanchett, "Engineering and Maintenance Problems in the Road Passenger Transport Industry." At Leeds City Transport Offices, 1 Swinegate, Leeds, 1. 7 p.m.  
January 29.—Institute of Traffic Administration (Merseyside). Paper by Mr. W. G. Rogerson, "The Wartime Liberty Vessel" (Part 2). At Exchange Hotel, Liverpool. 7.30 p.m.

Institution of Mechanical Engineers (Education). Discussion, "To what extent should students be penalised for bad English in National Certificate Examination Papers?" At 1 Birdcage Walk, S.W.1. 6 p.m.  
January 31.—Institution of Mechanical Engineers. General meeting in conjunction with Internal Combustion Engine Group. Paper by Mr. W. Rizk, "Some Experimental Studies of the Mixing Processes and Flow Configuration in 2-cycle Engine Scavenging." At 1 Birdcage Walk, S.W.1. 6 p.m.  
Institute of Traffic Administration (Medway). Brains trust. At Sun Hotel, Chatham. 7.30 p.m.

Institution of Railway Signal Engineers (Bristol). Paper by Mr. W. M. Sweetnam, "Developments in Signalling Equipment in Relation to the 25 kV Electrification Project." At meeting room above Main Booking Hall, Temple Meads Station, Bristol. 6 p.m.  
March 13-23.—International Motor Show at Geneva.  
March 21.—Institute of Transport. Annual dinner. At Dorchester Hotel, W.I.

April 15-18.—Scottish Road Passenger Transport Association Annual Conference. At Turnberry.  
May 13-15.—Public Transport Association. Annual Conference. At Harrogate.

June 3-6.—Institute of Transport. Congress. In Dublin.  
September 26-October 4.—Commercial Motor Transport Exhibition. At Earls Court.

MODERN TRANSPORT has an arrangement with Reuter's Trade Service whereby publication is made in this newspaper of all essential news from all parts of the world concerning traffic and transport by rail, road, sea and air and allied interests.

## VERSATILE DIESEL RAILCARS

Multi-Purpose Stock for Ulster Transport Authority

### TURBOCHARGED ENGINE AND FLEXIBLE TRANSMISSION

RAILWAY operators in many parts of the world will watch with interest the progress in service of a new type of diesel railcar stock about to be commissioned by Ulster Transport Authority for use on its main line between Belfast and Londonderry. For years this line, with a falling passenger traffic and a sparse freight traffic in an area without heavy industries, has been uneconomic to operate with conventional stock—conditions that have many parallels in present-day railway operation.

A possible solution to the problem proposed by Mr. James Courtney, chief engineer of

wide use on railways in many parts of the world and its automatic control equipment is also extensively employed in road vehicles and is finding widening application in diesel railcars. To provide bi-directional running, a Self-Changing Gears band-operated planetary gearbox was developed from the company's existing marine reversing unit and the final drive to both axles of the bogie is by the same manufacturer's well-established spiral bevel gear units.

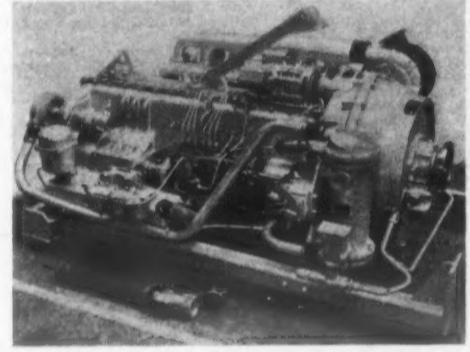
#### Conversion

The U.T.A. power cars have been produced by mounting these power and transmission units under the floor of existing passenger coaches. The necessity of converting existing stock and of using estab-



Pictured beside Belfast Lough on the Belfast-Larne line, the new U.T.A. multi-purpose train of four diesel power cars and dining car

Ulster Transport Authority, was to develop a diesel railcar of increased power and with a transmission system of great flexibility, giving it a dual ability to operate either in fast passenger trains or to haul a considerable tail load at lower speeds. This would permit a very high utilisation rate by the ability to work express passenger trains, slower passenger or mixed passenger-freight trains by the coupling of additional coaches or wagons, or light freight trains by using a power car as a locomotive. This proposal has now been given substance at the



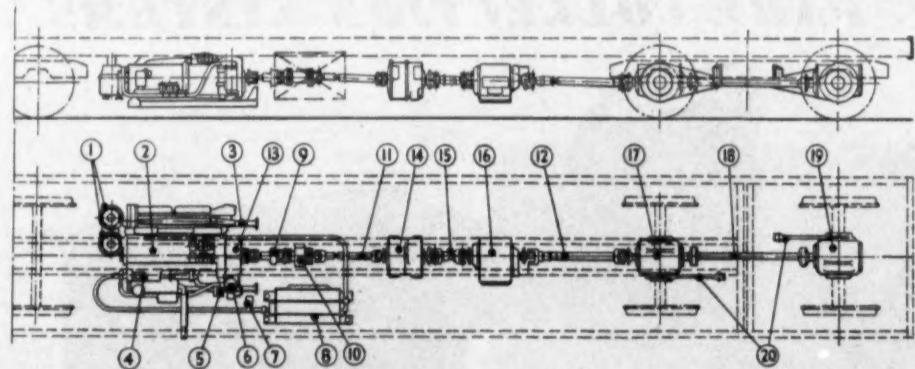
The Leyland 275-b.h.p. turbocharged diesel and Schneider-Self-Changing Gears torque converter ready for installation



Views of the driver's control desk and instruments. The brake valve to the right of the desk is for freight working while the lower valve to the right of the seat is for passenger-train working

there is no reason to suppose that the twin-unit installation will not be feasible with not-very-extensive modification of units or layout.

As we recorded in our last issue, the performance of the cars is impressive. Demonstrated on the U.T.A. Belfast-Londonderry line, a train of four power cars and a dining car, with accommodation for 18 first and 208 second-class passengers, and a total weight of 180 tons and horsepower of 1,100 reached a maximum speed of 90 m.p.h. It covered the 93-mile run, making five intermediate stops,



General arrangement drawings showing 1 engine air filters, 2 engine, 3 engine sub-frame, 4 fan-drive pump, 5 throttle motor, 6 converter fluid cooler, 7 fan and radiator-shutter assembly, 8 radiator fan and shutter, 9 freewheel shaft, 10 compressor and dynamo drive assembly, 11, 12, 15 and 18 propeller shafts, 13 torque converter, 14 bi-directional gearbox, 16 four-speed gearbox, 17 and 19 final-drive assemblies, 20 torque reaction members

kinetic torque converter and automatically controlled four-speed planetary gearbox provides new and attractive features. Now fully developed and extensively tested on U.T.A. lines, the various component units are available for sale either as a complete power pack or singly for incorporation in railcars or locomotives.

To meet the power requirements, Leyland Motors, Limited, considered that an exhaust-gas turbocharged form of its established 0900 15-litre horizontal diesel engine, which is used in unblown form in the B.U.T. two-car set that entered service with the Eastern Region of British Railways last year, would meet the case. The turbocharged engine develops 275 b.h.p. at 1,800 r.p.m. and is close-coupled to a Schneider single-stage torque converter of the type now produced in this country by Self-Changing Gears, Limited. The Self-Changing Gears four-speed planetary gearbox is in

(Continued on page 10)

### Mileage at a glance

#### with BTH RAILWAY MILEAGE RECORDERS

Accurate mileage recording, essential for efficient operation and maintenance of railway rolling stock, is greatly simplified by these new BTH mileage recorders. They are designed for axle-box mounting and are available in two forms. Form A is a complete counter unit with

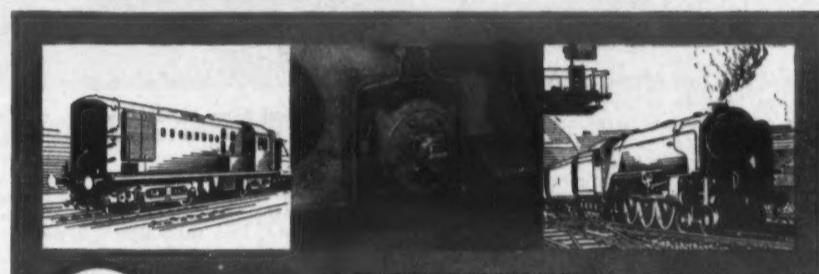
drive and resilient mounting for attachment to axle-box cover. It is interchangeable with BTH Type JB tachogenerator for axle-shaft drive. Form B is a counter unit with reduction gearing for incorporation with BTH Type RC tachogenerator, driven from the generator shaft.

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For more details on BTH Mileage Recorders for railway service please write. Our staff of specialist engineers will be glad to advise you.



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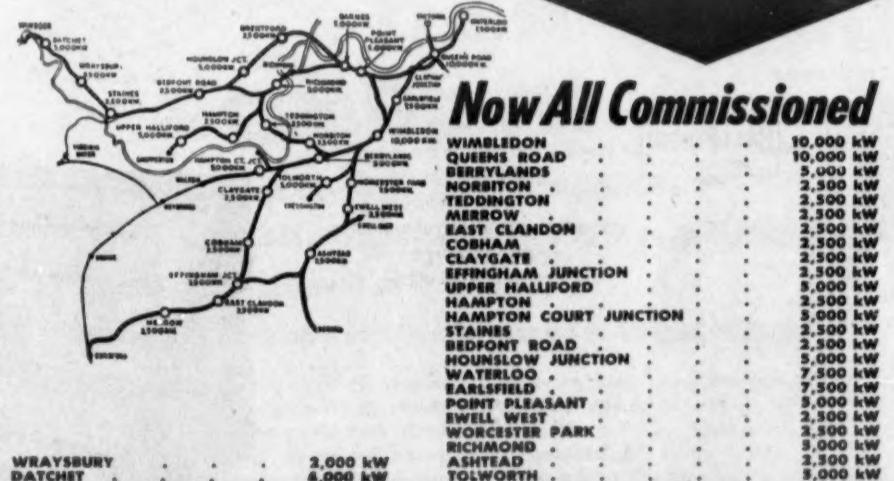
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### BRITISH RAILWAYS SOUTHERN REGION 28 SUBSTATIONS BEING EQUIPPED WITH HEWITTIC RECTIFIERS (Total 117,500 kW.)



Illustrated: the 10,000 kW. sub-station at Wimbledon and inset, one of the banks of rectifiers installed therein.



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**LORRY—BUS—COACH****Four-Point Haulage Wage Claim**

**S**UBSTANTIAL increases in statutory minimum wages for road haulage workers have been submitted in a wage claim lodged by the T. and G.W.U. with the employers' side of the Road Haulage Wages Council on Wednesday this week. Along with this came a demand for a substantial increase in subsistence payments, amendment of the statutory period for holidays to run from May 1 to September 30 and for a considerable number of towns to be raised to Grade 1. The National Joint Industrial Council at present has under discussion union proposals for a 15 per cent wage increase to cover the higher speed limit for heavy commercial vehicles, but no date has been fixed for its next meeting.

**New Ideas for R.H.A. Conference**

FROM comments passed upon the business sessions at the Rothesay conference of the Road Haulage Association in October last year, Mr. R. Morton Mitchell, chief executive officer of the association, says that it is obvious that something other than lists of resolutions should be used to make up the entire length of these sessions. One or more papers of topical interest might be used, with discussions to follow; or a debate between politicians, B.T.C. representatives and hauliers; or a brains trust. This year's conference is at Torquay.

**Dundee Bus Appeal Dropped**

**T**HE Crown has abandoned its appeal in a case involving Dundee Corporation and one of its bus drivers. The appeal followed the trial and acquittal of both at Dundee Sheriff Court after an accident (MODERN TRANSPORT, December 14, 1957). The bus driver was then found not guilty of using, and the Corporation not guilty of causing and permitting him to use, a bus with defective tyres. At the trial conflicting expert evidence was given as to the condition of the tyres on the bus concerned.

**Hauliers' Part in Open Cast Mining**

**R**OAD hauliers have moved 12,500,000 tons of open cast coal—"a wonderful achievement"—between the nationalisation of the coal industry in 1947 and the end of last year, said Mr. C. G. Simmonds, deputy marketing director of the National Coal Board, at the dinner and dance of the Nottingham and District Hauliers, Limited (a traffic pool), on January 17. Mr. Simmonds said that over the past decade the two industries—haulage and coal—"had come to know each other, to like each other and to be of some use to each other."

**R.H.A. Continental Services Committee**

AT a meeting held at the Royal Automobile Club on Tuesday this week, attended by some 40 members of the Road Haulage Association, it was decided to set up an international road transport committee to "promote the development of international carriage of goods by road and to consider and advise upon all matters affecting such international transport." Those present were all actively engaged or interested in ferry operations to the Continent. There was a general discussion of the potentialities and the difficulties encoun-

tered in such transits. The chairman of the new committee is Mr. J. A. Murley (I. Leftley, Limited, Barking) and the vice-chairmen Messrs. J. S. Darbyshire (Sutton and Son (St. Helens), Limited) and T. Nelson (T. Nelson, Limited, of Liverpool).

**Conference on Continental Ferry Service**

**C**ONSIDERABLE expansion of road transport links between Britain and the Continent was forecast at a conference in London on January 14, convened by the Transport Ferry Service. It was attended by the European and British freight agents of the Atlantic Steam Navigation Co., Limited, owner of the Tilbury—Antwerp service, by British road hauliers and forwarding agents.



Hauling steel from Middlesbrough, this Foden FETU6/25 articulated unit has the maker's two-stroke engine and 12-speed epicyclic gearbox. Both tractor and trailer have Michelin D20 metallic tyres

Mr. John Bustard, director and general manager, commenting on the first twelve months of pioneering on this route, said that although the service had expanded from two to three sailings weekly in each direction, he was looking forward to the time when there would be daily sailings.

**More Front-Entrance Double Deckers**

**S**EVEN Leyland Titan high-capacity double-deckers with front entrances ordered by Preston Corporation Transport Department will have Pneumo-cyclic semi-automatic gearboxes. Bodies for the vehicles, which are 30 ft. long and seat 70 or 72 passengers, will be supplied by Metropolitan-Cammell-Weymann, Limited. Mr. W. H. Barker, general manager of the transport department, has expressed the belief that the front entrance will reduce platform accidents, apart from speeding loading. The door mechanism will be operated by the driver, who will have visual and

audible notice, through an unglazed aperture at the side of the cab, of passengers entering or leaving the bus.

**Lowland Services Go to Airdrie Depot**

**S**ERVICES provided on the east side of Glasgow by Lowland Motorways, Limited, the business acquired by Scottish Omnibuses, Limited, are being worked from the S.M.T. depot at Clarkston, Airdrie, subject to the transfer of the requisite stage and express licences. The Lowland Motorways company itself will be placed in voluntary liquidation to comply with the requirements of the Transport Act, 1953.

**Calor Gas in Bulk**

**D**ELIVERY of propane gas in bulk tankers instead of in small cylinders has been announced in Scotland by the Calor Gas Industrial Division. It has a depot at Grangemouth feeding cylinders to its various rural depots and this system will gradually be replaced in so far as larger industrial users are concerned by bulk methods. Initially

the

tankers will also carry cylinders. Supplies will be cheaper by bulk and 1,500 lb. welded storage tanks will be available to consumers using three to five tons of gas per annum.

**Lincolnshire One-Man Fleet?**

**W**RITING in the staff bulletin, Mr. R. F. Bushrod, new general manager of the Lincolnshire Road Car Co., Limited, states that during 1958 the undertaking will either have to withdraw some services entirely or reintroduce a considerable number of one-man operated vehicles (before the 1939-45 war a considerable portion of the fleet comprised small one-man buses). The company anticipates the intake of 37 new vehicles during the year. There will be 11 60-seat double-deckers, seven 45-seat single-deckers, six 35-seat single-deckers, five 41-seat single-deckers with coach-type seats, six 33-seat coaches, and two 39-seat coaches. In the cold winter weather in this part of the world a

further number of vehicles with doors will prove an attraction, says Mr. Bushrod. He looks forward to the completion of the new bus station, garage and administrative offices at St. Mark's, Lincoln, by the end of the year.

**Computer in Haulage Industry**

**A**N electronic computer with high-capacity "memory" in the form of magnetic tapes has been ordered by the McLean Trucking Company for use at its general offices at Winston-Salem, N.C., in the United States. This new I.B.M. 650 computer, the first in the U.S. motor trucking industry, will make it possible for McLean Trucking to continue fast processing of data which enables accurate predictions of requirements for mobile equipment based on the peak transport seasons of various industries. The company operates a fleet of over 2,000 units through 44 terminals along the Eastern seaboard and in the Midwest. The computer will be used to process revenue cost statistics and other accounting information to help give McLean management an up-to-the-minute picture of the firm's wide operations. Other applications being planned include payroll accounting, interline revenue accounting and statistics, consignor and consignee analyses, budget control, equipment depreciation records, parts inventory control and commission accounting.

**Colombo Conversion Complete**

**T**RAMCARS will disappear entirely in Colombo on March 1, reports a correspondent. Trams have been gradually displaced by trolleybuses and the remaining 15 trams will be replaced on that date. Colombo introduced trolleybuses as recently as 1951. The first fleet was a double-deck one. It has since been decided that a single-deck vehicle of large carrying capacity is better suited to requirements. An order for 26 chassis was placed with Sunbeam in 1955, six being for vehicles with an overall length of 35 ft. and the remaining 20 with an overall length of 30 ft. The first of the larger vehicles went into service in Colombo on February 1, 1957. The information since received from Colombo indicates the new vehicles have attracted very considerable attention and are likely to be more popular with the travelling public than the double-deck type. All the bodies for these Colombo vehicles have been built in England, bodies for the above 26 single-deck vehicles being built by East Lancashire Coach Builders, Limited, of Blackburn. The electric traction equipment was supplied by the English Electric Co., Limited.

**Bus and Coach Developments**

**T**HE Eastern Counties Omnibus Co., Limited, opens today (January 25) a snack bar and cafe at its Surrey Street bus station, Norwich. Between nine and 10 million passengers annually pass through the station.

London Transport proposes to withdraw the Monday to Friday service on Route 280 (Grays-Uptonminster Station).

Barton Transport, Limited, proposes a Saturday service between Nottingham and Lowdham via Lambley.

United Counties Omnibus Co., Limited, proposes to extend its Aylesbury-Bedford service (141) to Huntingdon and St. Ives.

Eastern National Omnibus Co., Limited, applies for an express service on summer Saturdays between Southend and Bournemouth.

Maidstone and District Motor Services, Limited, seeks express services on Saturdays and Sundays in summer from Hastings, Tunbridge Wells and Sheerness with intermediate picking-up points in Kent, to Brentwood, Chelmsford, Colchester, Clacton, Frinton and Walton-on-the-Naze.

London Transport places in service RML3, the fourth of its experimental double-deckers, on January 22. It is operating from Willesden garage on route 8 between Willesden and Old Ford. This bus, with Leyland running units, has a Weymann body.

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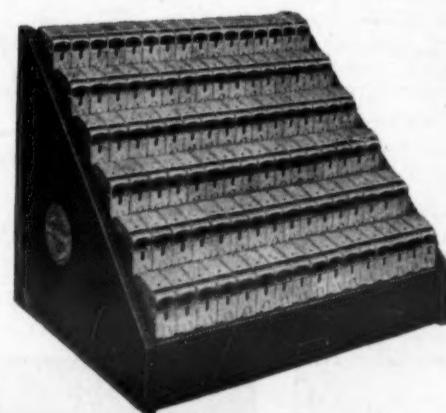
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## BUS AND COACH SERVICES IN THE U.S.S.R.

*Impressions from a Recent Visit*

### RELIANCE ON A FEW VEHICLE TYPES

THE connoisseur of variety in buses and coaches who visits the Soviet Union today is in for a dull time. Buses abound, both in town and country, but not even in the land of General Motors are they so completely and rigidly standardised. In the U.S.S.R., the same mass-produced vehicle now serves for every type of work from close-headway city routes to works services, private hire, sightseeing drives and airport coach work, and even (with improved seating) for long-distance journeys. Nor is this physical standardisation relieved by varying the colour scheme, for the same vehicle colours (dark red for trams, blue for trolleybuses, light red for buses) were found in every town visited and are probably standard throughout the Union.

#### ZIS or ZIL Products

Almost all Russian buses and coaches come from one large factory, the former Zavod Imeni Stalina (Factory Named After Stalin) in the south-east suburbs of Moscow. Lenin has recently ousted Stalin in its title, changing the familiar initials from Z.I.S. to Z.I.L., but thousands of its pre-1957 products in circulation bear witness to its former name. Its production since the war has been such as to make possible a vast expansion of bus and coach services, while at the same time apparently replacing all surviving prewar vehicles.

The standard bus referred to in the opening paragraph is the ZIS 155, a simple, robust petrol-engined design with 28 seats and an official standing capacity of 22, often much exceeded in practice.



A ZIS 155 on country service at Minsk, the capital of White Russia; a ZIL 158 tourist bus which had brought sightseers to Moscow University; below, a ZIS 155 with a tourist excursion at Peterhof Palace, a favourite trip from Leningrad; and, right, a new 32-seat long-distance coach with rear diesel engine operating the Leningrad-Tallin service. The livery of the last-mentioned U.S.S.R. vehicle is light grey with a dark red band; the others are red and white

Air brakes are fitted, and air operation is also used for the windscreen wipers and the two sets of folding doors. The all-steel body is of considerable strength, and at parades and spectacles the sight of a dozen or more people standing on the roof of a ZIS 155 and using it as a grandstand seems to occasion no surprise. Body styling is frankly American, with a sharply inclined hooded windscreen, oval standee windows, double folding doors and upwards-opening ratchet-mounted windows. The seats are of foam-rubber covered in a hard-wearing grey leathercloth, and the driver is separated from his passengers by a full-width bulkhead.

#### Town Service Type

One meets the ZIS 155 at every turn; there is even one in London, used by the Russian Embassy. Moscow and Leningrad each employ more than a thousand on city and suburban service, special duties, tourist work and every other purpose for which a bus may be required. Two were even seen fitted up as a mobile television unit. On town services, passengers enter it by the rear door and leave at the front, except for elderly and disabled persons and those with children below school age, who may board at the front and claim priority for the first ten seats. Since the conductress usually occupies a raised seat at the rear, passengers thus exempted from the usual rear-to-front "flow" pass their fares from hand to hand down the bus, receiving their tickets and change in the same way. Where change-giving is involved, the amounts thus handed down the bus are sometimes quite large, which underlines the honesty of the average Russian citizen.

In smaller towns such as Viborg and Minsk the ZIS 155 comprises the entire bus fleet, but on a few routes in the large cities one finds its outwardly similar but longer predecessor, the ZIS 154 of 1947. This bus was designed specifically for city service, with 34 seats and official standing space for 26; it has a rear-mounted diesel engine with electric transmission. The electric drive and pedal control makes for ease of driving, both the driver's hands being normally free for steering, but these diesel-electric buses are not as widely used as was originally intended. When new, the ZIS 154 was arranged for front entrance and rear exit, but now conforms to the standard arrangement.

#### For Sightseeing

Despite its small windows and lack of luggage accommodation, the ZIS 155 was until recently the standard vehicle for transfer and sightseeing work, the Moscow fleet including some whose destination blinds include such unlikely places as "China" and "Mongolia" for use when transporting the many visiting delegations. Even now, the ZIS 155 seems to have a monopoly of tourist service in Leningrad, but with the recent officially encouraged growth of tourist traffic, it was decided to develop a new type of vehicle specifically for use on sightseeing and tourist transfer work under the aegis of Intourist, the official Russian travel organisation, and these new vehicles are now in general use in Moscow.

This tourist bus, now being produced in quantity at the same Moscow factory, is the ZIL 158. Compared with the ZIS 155 it offers improved seating, larger windows, curved roof-lights, a much improved forward and rear view, and a separate

luggage boot in rear. Those used by Intourist in Moscow are mostly in a red and white livery, but other examples in light blue and white may be seen on the 18½-mile express bus service No. 11 from Sverdlov Square in Moscow to Vnukovo Airport. This service runs at frequent intervals throughout the day, irrespective of flight times, and charges a fare of five roubles, about three times the normal bus fare for a like distance.

#### Long-distance Coaches

Long-distance coach services are a fairly recent innovation in the U.S.S.R., and are still partly seasonal in character, but have quickly caught the public favour. At first they were worked by the ZIS 155 fitted with luxury seating and curtains, but in 1956 a new ZIS coach appeared designed especially for long-distance services. This type, now in large-scale production, is a long 32-seat vehicle with a 180 h.p. six-cylinder diesel engine mounted in the rear of the bus. Seating is of adjustable aircraft type with armrests and headrests, and other features include luggage racks, forced ventilation, radio and loudspeakers. The single entrance door opens outwards and is opposite the half-width cab, with no separate emergency exit. External finish is silver-grey with a dark red waistband.

These new vehicles are found on all the longer-distance services, such as Moscow-Kharkov, Moscow-Gorki, Moscow-Simferopol and Yalta (seasonal), Minsk-Smolensk, Minsk-Vilnius—



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ILLUMINATION of large station name signs at the extreme incoming ends of platforms has always been a problem. To overcome this, the Western Region, in co-operation with Mead McLean and Co., Limited, has produced and installed at Acton Main Line Station an Eroline sign, the illumination fittings of which are an integral part of the structure. The conduit supporting arms for the two twin-set lamps are connected to the supply leads through the sign and down through one of the tubular steel uprights, thus giving a neat and compact appearance

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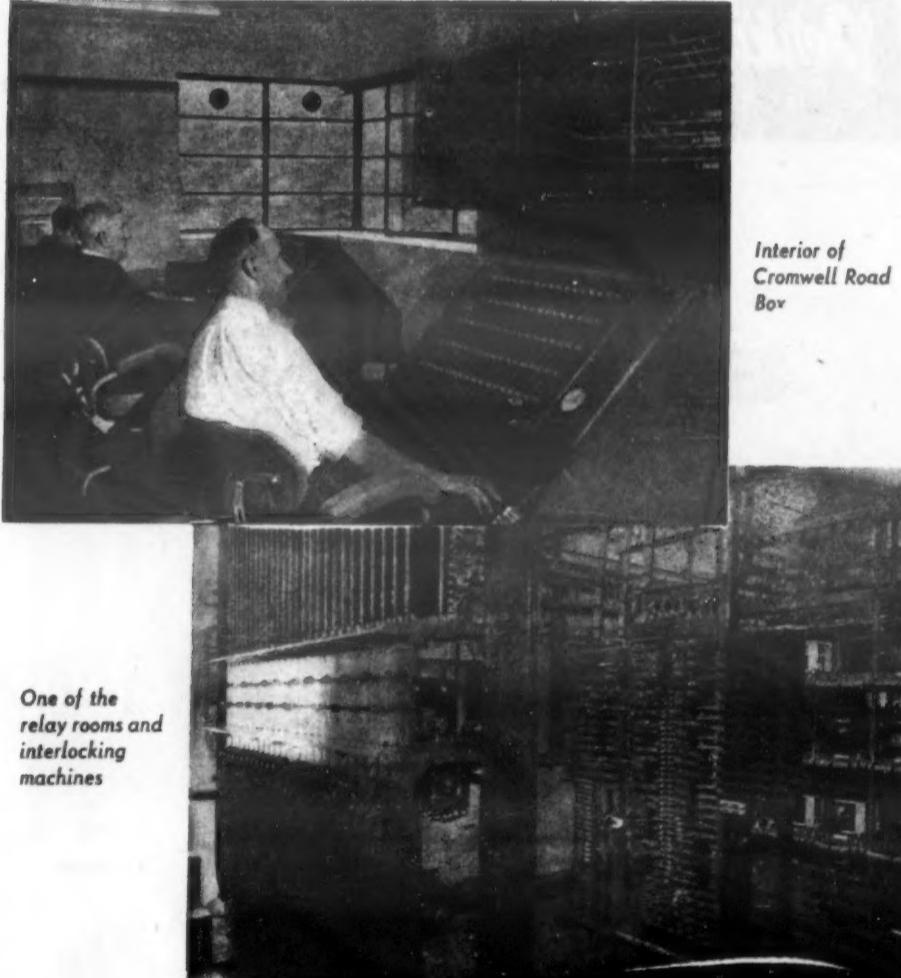


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### PICKFORDS HEAVY HAULAGE SERVICE

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New Signalling  
at Cromwell Road



One of the  
relay rooms and  
interlocking  
machines

On July 28th London Transport brought into service the re-arranged track layout between South Kensington and Gloucester Road on the District Line, together with the modernised signalling which included a centralised control at Cromwell Road.

Formerly operated from five boxes, the new box controls the signalling of the whole area by two new push-button control desks, with the aid of three new remotely operated interlocking machines in the South Kensington, Gloucester Road and Triangle Sidings area, and three already existing at High Street Kensington, Earls Court East, and Earls Court West.

The signalling equipment was made and supplied to the requirements of Mr. R. Dell, Signal Engineer, London Transport Executive.

by



Westinghouse Brake & Signal Co. Ltd., 82 York Way, London, N.1

## MECHANISED STATION ACCOUNTANCY

### North Eastern Region Hull Office

TRADERS' traffic accounts in the Hull and York districts of the North Eastern Region of British Railways have been mechanised and concentrated in the new traffic accounts office at Hull Neptune Street. The accounts of 217 stations located in an area bounded approximately by Goole, Selby, Harrogate, Thirsk and Whitby are embraced in the new organisation.

The scheme has been introduced in four stages, the first of which came into operation last June.

to cards which, after being verified, become the source from which debit lists, accounts and statistical information are later compiled.

Tabulating machines, to which continuous stationery devices have been fitted, produce the traders' account from the punched card. The account is rendered to the trader together with the originals of his consignment notes. To arrange the cards in the order required to produce any particular account or statistical statement, two machines



Mechanised accounting at Hull: Mrs. Neal operating the microfilm reader; Miss Abel and Miss Oust are making microfilms of traders' consignment notes; right, Miss Spavin watching the tabulator as it abstracts statements from punched cards

This included the accounts for Hull Central and branch stations including Bridlington and Driffield. The second stage took in the remainder of the Hull district stations, and the third stage covered the fish traffic from St. Andrew's Dock. The final stage has now brought into the scheme all the York district stations, and the centralised accounts office is now handling approximately 7,000 consignment notes a day.

#### Procedure Followed

The consignment notes, on being received from the various stations, are first sorted into alphabetical order of traders and are then microfilmed for record purposes. All the details required for accountancy purposes are codified and punched on

are provided. The first is a sorter, operated electrically, which sorts the cards at the rate of 36,000 an hour. The other, the collator, merges, selects, extracts and compares cards at very high speeds. Some 15 specially trained operators are employed.

The machines are of Hollerith type supplied by the British Tabulating Machine Co., Limited. The microfilm making and reading equipment has been supplied by Kodak, Limited.

The new centre occupies the goods office of the former Hull and Barnsley Railway at Hull Neptune Street. Structural alterations, including the provision of new lighting, central heating and improved toilet and telephone facilities, have been carried out, providing an efficient and attractive home for the new organisation.

### NETHERLANDS RAILWAYS BUSES

#### First of Three Hundred

ON January 17, the first of 300 new buses for Netherlands Railways was officially handed over in Amsterdam by representatives of the companies concerned in the construction. The new vehicles, which are to the design of the operator, are of chassisless construction and employ Leyland Worldmaster running units, supplied through Leyland Holland, N.V., comprising 125-b.h.p. under-floor diesel engine, semi-automatic Pneumo-cyclic gearbox and specially designed Leyland independent front-suspension units.

Two classes of single-deck bus are included in the



At the handing-over ceremony, left to right, Messrs. Leefland, director, Werkspoor, F. Q. den Hollander, president, Netherlands Railways, R. Damme, managing director, Werkspoor, and W. Smit, managing director, Leyland Holland

order for 300. One pattern is a 70-passenger two-door bus bodied by Werkspoor, which is intended for intercity services on Class A roads. The other is a single-entrance design with coachwork by Verheul, which is equipped with coach-type seats for 48 passengers and will be used on long-distance services.

Extensively used on the Continent, the Schlegel system of used-oil recovery is now being handled in this country and Eire by Liquid Systems, Limited, Norwich Union House, Wellesley Road, Croydon. Schlegel regenerators combine distillation, adsorption and filtration in the recovery process and can be used for contaminated petrol, paraffin, trichlorethylene and other liquids as well as lubricating oil.

After lengthy negotiations between the Sociedad Iberica de Gomas y Amiantos S.A. Bilbao, the Banco Popular Espanol group, and the Dunlop Rubber Co., Limited, in connection with the establishment of a tyre factory in Spain, it has not been possible to arrange the necessary finance now required from Spanish sources. All parties have therefore agreed that the project cannot now proceed.

### EXPRESS FISH TRAINS

#### The Blue Spot Fish Special

THE first fish special on British Railways to have vehicles fitted with roller bearing axleboxes left Aberdeen at 12.30 on Monday, January 20, for London Kings Cross. This train, known as *The Blue Spot Fish Special*, inaugurates a new service which it is hoped will go a long way to eliminate delays to the fish traffic from the north-east of Scotland to the London markets. British Railways is very conscious of the importance of providing speedy and reliable transport for fish consigned to the long-distance markets in the south and following upon extensive tests and experiments by their research and technical departments, 275 vans are being fitted with roller bearing axleboxes. These vans will be used exclusively on the fish specials between the north-east of Scotland and British Railways.

The first 100 vans are now ready and, rather than wait for all to be completed, these have been allocated to the 12.30 p.m. working between Aberdeen and London and will go into service straight away. The balance of the vehicles will be allocated to other services from north-east Scotland as quickly as the necessary equipment can be obtained from the manufacturers and fitted to the wagons. Many of the wagons are being fitted in the Cowdray carriage and wagon works of the Scottish Region.

Each van has a distinctive blue circle, 15 in. in diameter, painted on a white background on each side for easy recognition by railway staff, who will ensure that all such vehicles are used only for the express shuttle service between north-east Scotland and London. It is hoped that *The Blue Spot Fish Specials* will provide another valuable link between the fish merchants of the north-east of Scotland and British Railways.



An A.E.C. Regal IV of Sheffield United Tours apart from acting as baggage coach for competitors from Southern England in the Monte Carlo Rally, is serving as the mobile headquarters of the Monte Carlo British Competitors Club. This view shows the interior with the luggage stowed

A new branch of Lombank, Limited, has been opened at Lombard House, Earl Road, Mold, Flintshire. The telephone number is Mold 656.

The Professional and Executive Register (which took over the functions of the London Appointments Office in April last) is now at Ministry of Labour and National Service, City of London Employment Exchange, Professional and Executive Register, Atlantic House, Farringdon Street, E.C.4. (Telephone: City 5020.)

## LARGE ORDER BY B.O.A.C.

For 35 Vickers VC10 Jet Aircraft

### ECONOMICAL AND VERSATILE MACHINE ENVISAGED

A £60 million contract for the biggest air liner order ever placed in Britain was signed last week between the British Overseas Airways Corporation and Vickers-Armstrongs (Aircraft), Limited. It is for 35 of the new Vickers VC10 jet air liners and the corporation has also taken an option on a further 20 of these aircraft. The first details of the aircraft show that it will be the first pure-jet British air liner for use on the North Atlantic route, and that it should have a better all-round performance than any competitive jet so far announced.

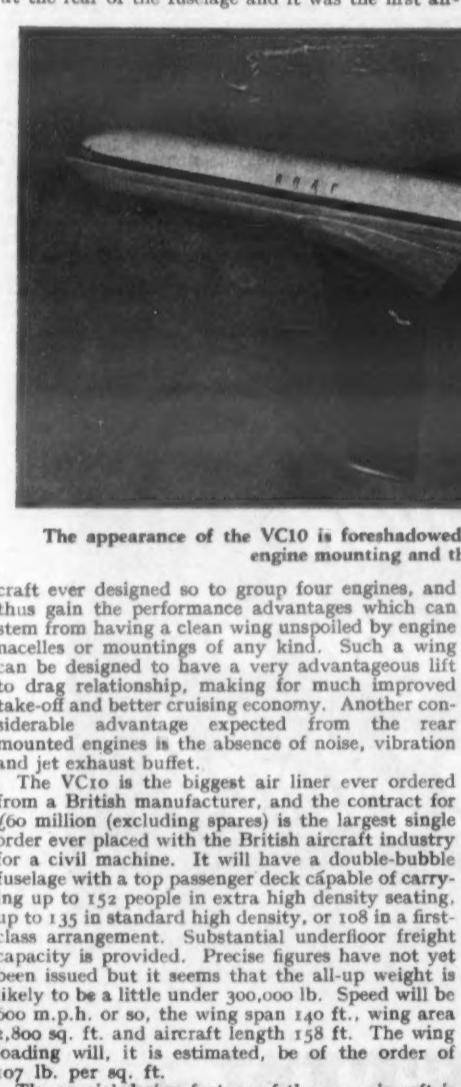
An earlier announcement of B.O.A.C.'s intention to place an order for VC10's was made last May, when the aircraft was stated to meet the corporation's requirement for the African, Australian and Far Eastern routes from the mid-1960's onwards. Since then developments in the design of the aircraft, and in the power available from its four Rolls-Royce Conway engines, have made it an air liner which B.O.A.C. will use on the North Atlantic as well as on the Eastern hemisphere routes, without impairing its efficiency on the latter services.

#### Rear-Mounted Engines

The Rolls-Royce Conway engines will be mounted at the rear of the fuselage and it was the first air-

craft ever designed so to group four engines, and thus gain the performance advantages which can stem from having a clean wing unspoiled by engine nacelles or mountings of any kind. Such a wing can be designed to have a very advantageous lift-to-drag relationship, making for much improved take-off and better cruising economy. Another considerable advantage expected from the rear-mounted engines in the absence of noise, vibration and jet exhaust buffet.

The VC10 is the biggest air liner ever ordered from a British manufacturer, and the contract for £60 million (excluding spares) is the largest single order ever placed with the British aircraft industry for a civil machine. It will have a double-bubble fuselage with a top passenger deck capable of carrying up to 152 people in extra high density seating, up to 135 in standard high density, or 108 in a first-class arrangement. Substantial underfloor freight capacity is provided. Precise figures have not yet been issued but it seems that the all-up weight is likely to be a little under 300,000 lb. Speed will be 600 m.p.h. or so, the wing span 140 ft., wing area 2,800 sq. ft. and aircraft length 158 ft. The wing loading will, it is estimated, be of the order of 107 lb. per sq. ft.



The appearance of the VC10 is foreshadowed by this model wherein may be seen the rear engine mounting and the high tail which results

attack which modern design knowledge can launch on one of the big handicaps of the pure jet—its airfield limitations. It would come into service several years after the first big U.S.A. jets and consequently must offer distinct improvements. Although it had a higher cruising speed by 15-20 m.p.h. the significant advantage over its American competitors lay in its ability to carry substantial payloads over long distances on routes served by or including difficult airfields. This would result in improved flexibility of operation and therefore better all-round economy. It was also certain that the rear-mounted engines would provide a much higher standard of passenger comfort than was possible with wing-mounted engines.

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The crucial design feature of the new aircraft is

Developments which have taken place in Conway engine powers since the VC10 was originally conceived for B.O.A.C.'s Eastern hemisphere routes have resulted in the aeroplane now being able to do the nonstop North Atlantic service without any loss of efficiency on the other routes. We are proud of being selected for this contract by B.O.A.C. and believe that, once again, the Vickers-Rolls-Royce partnership has brought about a side-by-side development of engine and airframe which will be as outstanding in the VC10 as it has been in previous aeroplanes."

## Last Yorks Leave a Fleet

### SERVICE WITH B.O.A.C. OVER 13 YEARS

No other aircraft had worked for the British Overseas Airways Corporation or its predecessor, Imperial Airways, for as many years as the Avro York, which retired late last year after 13 years service. The last aircraft was handed over to Skyways on November 22, 1957. Yorks were first flown by the corporation in 1944, the first service having inaugurated the United Kingdom-Cairo route via Morocco on April 22 of that year. For the next six years they played an important part in maintaining Britain's long distance overseas air services. They were withdrawn from scheduled passenger service in October, 1950, and the last service they operated was between Santiago (Chile) and Nassau. During those six years they had flown more than 13 million miles and a total of some 172,000 hours, on the routes of B.O.A.C. and British South American Airways (merged with B.O.A.C. in 1949).

The York, built by A. V. Roe and Co., Limited, and powered by four Rolls-Royce Merlin engines, was the first delivered to B.O.A.C. in the p.c.f.

(passenger-cum-freighter) version, of which the corporation originally received five. They were divided into two compartments, the rear one taking 12 passengers and the forward one being used for mail and freight. No. 2 Line (Hurn), which was responsible from the start for the operation of Yorks, worked with other branches of the corporation to produce new designs providing improved standards of passenger comfort, and when a further 20 of the aircraft were received 13 were converted to passenger sleepers with 14 seats, of which 12 could be converted into comfortable berths. The remaining 12 aircraft were converted to 18-seaters. The sleeper Yorks were later fitted with 18 seats.

In 1949 a new B.O.A.C. design for the Yorks, incorporating soundproofing, concealed lighting and other modifications, produced a quieter, more comfortable and more attractive single cabin which seated 21 passengers. The first regular B.O.A.C. York service began in 1944 and in November, 1945, the sleeper Yorks opened for B.O.A.C. the U.K.—

(Continued on page 11)

# HALT

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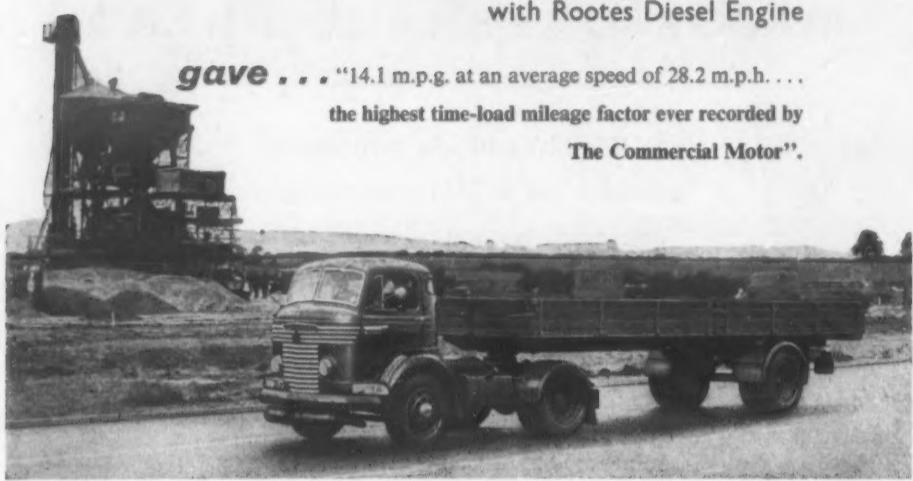
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## NEWS FROM ALL QUARTERS

### Station to Close

Colwich Station (London Midland Region) between Lichfield and Stafford, is to be closed on and from February 3.



### Railway Shopmen's Wages

At a meeting of the Railway Shopmen's National Council on January 15 the employees' side submitted claims for a substantial increase in the rates of pay and a working week of 40 hours for railway shopmen. The Commission's representatives undertook to give their reply at a later meeting.



### Underground for Venezuelan Capital

A private company in Venezuela has now completed preliminary studies for the construction of an underground railway in the capital, Caracas. These studies have been based on the Paris Metropolitain and initial talks with Government officials have already taken place concerning execution of the project.



### Driver Instruction

The building of a "skid pan" where drivers could learn to control their vehicles on greasy surfaces is being considered by the Teesside Chamber of Commerce transport committee. It would be fully available for public use by all kinds of heavy vehicles, including buses. The idea was put forward by Mr. J. W. Leyfield, transport manager of I.C.I. at Wilton.



### London Traffic Administration Criticised

The Standing Joint Committee of the R.A.C., the A.A. and the R.S.A.C. at a meeting in London last week agreed unanimously that the administration of traffic matters in the Greater Metropolitan area was "cumbersome and thoroughly unsatisfactory." It decided to set up a special sub-committee to investigate the problems involved with the object of recommending a simpler and more effective system.



### Twin Underpasses at Hyde Park Corner

Provision for twin underpasses providing between them four lanes for traffic is to be included in the Hyde Park Corner scheme. This was made known in amendments to the scheme last week. It is subject to approval in Parliament. The revised scheme calls for the widening of Knightsbridge, to accommodate the additional underpass tunnel, by taking a strip of Hyde Park between Grosvenor Place and Wilton Place.



### E.C.G.D. Business in 1957

Some 20 per cent more business was covered during 1957 by commercial insurance of the Export Credits Guarantee Department than in the previous year. Goods declared as shipped under E.C.G.D. cover reached the record figure of £485.4 million, compared with £409.4 million in 1956. New medium-term transactions insured during the year reached the record figure of £156.6 million, compared with £77.5 million in 1956 and £42.3 million in 1955. The number of short-term policies current increased during the year from 4,112 to 4,326, although the face value of current policies declined from £546.6 million to £518.6 million.

### Freight Traffic in Rhodesia

Rhodesia Railways goods traffic reached the record figure of 1,085,906 tons in October, the latest for which complete returns have been published. This was the third month in 1957 in which the million-ton mark was passed.



### Coventry Ring Road to Start

The Minister of Transport has made a grant of over £232,000 to the Coventry City Council towards the cost, estimated at £110,000, of building the first section of an inner ring road about a quarter of a mile long.



### Trailer Car Trial at Blackpool

An extended trial of the Blackpool trailer tram unit was made at Blackpool on the seafront route after the close-down of running on Saturday, January 18. The general manager, Mr. J. C. Franklin, reported that it was successful and that the outfit would probably be used this summer.



### Sheffield—Chesterfield Motorway

Derbyshire County Council was told at its meeting on January 15 that the Minister of Transport anticipates the letting of contracts for a new motorway between Sheffield and Chesterfield by 1962. It would run from Sheffield city boundary to inside Chesterfield borough boundary, by-passing Dronfield and Unstone.



### Car Sleepers to Munich and Milan

This summer, from June 28 to August 31, Belgian National Railways is to operate car-sleeper trains, from Ostend to Milan as well as to Munich. Refreshment facilities will be available. The Munich train departs Ostend at 4.45 p.m. on Tuesday and Saturday, returning on Thursday and Sunday, the Milan portion leaves Ostend on Saturday at the same time, returning on Sunday. These trains will connect in both directions with the Dover-Ostend ferry.



### Projected Uganda Railway

A survey party is beginning the survey of the route—through Teso, Lango and Acholi districts of Uganda—for a possible extension of the East African Railways and Harbours line from Soroti to Gulu. About 1928 a survey was made for approximately 40 miles beyond Soroti and it is now proposed to extend this survey over the remaining 30 miles to Lira, and to undertake a reconnaissance survey as far as Gulu—about 60 miles from Lira. Such surveys will enable a more exact estimate to be made of the cost of construction of such a rail extension than was available to the committee which was appointed by the Uganda Government in 1955 to report on communications in the Northern Province. This committee submitted its report in April, 1956. It included a recommendation, among others, that no northern extension of the railway from Soroti should be undertaken within the duration of the present five-year development plan (1956-1960). The survey is to be undertaken by the department of the chief engineer, E.A.R. It is estimated that tonnages likely to pass over the projected line by 1960-62 will be such as to justify its construction and operation.

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COMMERCIAL AVIATION  
B.E.A. Has its Best Year  
INDIAN TRAFFIC GROWS

**I**N the calendar year 1957 British European Airways made a record net profit of £1,200,000 according to preliminary estimates announced by its chairman, Lord Douglas of Kirtleside. This "most satisfactory result" was achieved after all finance charges had been met and despite a shortfall in revenue after the raising of the bank rate. The previous highest annual profit was £1 million in the 1955 calendar year. Commenting on the year's achievements in the *B.E.A. Magazine*, Lord Douglas pointed out that the key to the good financial results had undoubtedly been the improvement in output per employee which now stood at 14,400 capacity ton miles a year—the highest ever reached by the staff. There had also been an all-round saving in expenditure. Thus in November, when revenue was £50,000 short of budget, they had managed to save £50,000 in expenditure so that the net result for the month was exactly as planned. In December, in addition to the short-fall in revenue due to the economic situation, fog on two days had lost the corporation about £40,000. The net result for this month was expected to be somewhat below budget, but the effect should be mitigated by savings in expenditure. With three months to go to the end of the financial year, there were still good prospects of achieving a net profit of over £1 million for the 1957-58 financial year. A total of some 2½ million people travelled by B.E.A. during 1957, which was an increase of about 300,000 (3 per cent) over the previous year's figures. The corporation had decided to start using the new Gatwick Airport on June 9 and from that date most of its London—Channel Islands services would operate therefrom. [It was announced last week that the Queen, accompanied by the Duke of Edinburgh, would open the airport formally on June 9.]

Lufthansa Expansion in 1957

During the calendar year 1957, the second complete one of operation by the re-established Lufthansa, 386,000 passengers were carried as compared with 229,670 in 1956. The freight load increased from 1,990 tons to 3,240 tons in 1957, while 1,609 tons of mail were shipped as compared with 1,050 tons in 1956.

S.A.S. Route to Indonesia

A service linking Scandinavia and Djakarta was to be opened by Scandinavian Airlines System on January 24. Negotiations with the Indonesian Government commenced last spring, and the route was granted to S.A.S. in October. Douglas DC6B aircraft, carrying first and tourist class passengers will operate once a week in each direction.

Another Belfast—Newcastle Service

Another attempt to operate a Belfast—Newcastle air service was announced recently by B.K.S. Air Transport. It will begin on May 23 and will be operated with Airspeed Ambassadors. Frequency will be thrice-weekly, increasing to five during the peak period, and operation will be throughout the year. Mr. H. Spring, manager, Ireland, also announced that B.K.S. had been granted a licence to operate Newcastle—Bergen route, and there would be immediate connections from Belfast and Dublin to Bergen through Newcastle.

B.O.A.C. Round-the-World

British Overseas Airways Corporation is to start round-the-world operation by way of San Francisco in March, 1959. Mr. Basil Smallpeice, the corporation's managing director, announced there recently. It is expected to be the shortest round-the-world service of any airline. The plan was to open up a San Francisco—Tokyo route, via Honolulu, thus completing a global circuit. Mr. Smallpeice also announced plans for an improved B.O.A.C. service from San Francisco. Beginning on April 3, he said, B.O.A.C. would introduce a turboprop Bristol Britannia on the twice-weekly San Francisco—London run. The Britannia would cut down the time for the journey from 20½ hours to 18½ hours.

Control of Speke

Provided the Government will give some financial aid and remove its restriction that air passenger traffic should pass through Manchester, Liverpool Corporation would be prepared to take over Speke Airport. Control was taken over from the corporation nearly 20 years ago under a scheme by which the corporation receives a yearly financial recompense. Alderman J. Braddock, leader of the city council, says he has received a communication from the Ministry of Transport and Civil Aviation stating that it is prepared to meet representatives of the corporation to discuss a possible transfer. Alderman Braddock is reported as saying: "When it is clear we can proceed to bring the airport within the confines of the land available up to the most modern standards possible we shall do so. But nothing will make us move before that."

More Passengers in India

Increased passenger traffic represented the biggest factor in the development of civil aviation in India in the first half of 1957. Air-India International and the Indian Airlines Corporation between them carried 309,048 passengers and flew 11,587,929 miles during the half year ended June 30, 1957. There were no accidents to the Indian scheduled air services during the period. A.I.I. flew 3,081,556 miles on its scheduled services carrying 41,582 passengers, 1,773,024 lb. of cargo and 732,836 lb. of mail as against 2,933,400 miles flown, 39,974 passengers, and 1,593,273 lb. of cargo and 672,100 lb. of mail carried. Capacity ton-miles operated recorded an increase from 21,564,506 during the preceding half year to 23,013,329 during the first half of 1957. Frequency of the India—United Kingdom services was increased from six to seven flights a week.

During the same period Indian Airlines Corporation flew 8,506,373 miles, carrying 267,666 passengers, 40,612,080 lb. of cargo and 5,748,104 lb. of mail. The respective figures for the previous six months were 8,829,211 miles, 242,602 passengers, 47,077,105 lb. of cargo and 5,921,985 lb. of mail. The overall load factor showed a further increase from 69.2 per cent during the second half of 1956 to 70 per cent during the first half of 1957 and capacity ton-miles operated were 25,618,441 during the first half of 1957 as against 25,641,780 in the preceding six-month period. During the first half of 1957 the night air mail services carried 31,967 passengers, 1,106,529 lb. of cargo and 1,113,967 lb. of mail as against 27,886 passengers, 1,541,555 lb. of cargo and 2,089,908 lb. of mail carried during the second half of 1956.

## A LONG CONNECTION WITH VEHICLE MANUFACTURE



Mr. C. W. REEVE, C.B.E., A.C.I.S.

*C. W. Reeve*

As already recorded in MODERN TRANSPORT the relinquishment next Tuesday by Mr. Charles William Reeve of his directorship of Associated Commercial Vehicles, Limited, will bring to an end his active connection with A.E.C., which dates back to 1915. Born in February, 1879, and educated at De Aston School, Market Rasen, and University College, Nottingham, he served in his early business life with the Premier Gas Engine Co., Limited, John Wright and Eagle Range (now Radiation, Limited) and the British Westinghouse Company (now Metropolitan-Vickers Electrical Co., Limited), and was appointed works accountant of the Associated Equipment Co., Limited, in March, 1915. In 1916 he became accountant of that company, and two years later joint manager. Subsequently he accepted the position of chief purchasing agent and stores superintendent of the London Underground Group of companies, including the A.E.C., which he held from 1924 to 1928, when he was appointed to act in the capacity of assistant to the chairman, Lord Ashfield. In October, 1929, Mr. Reeve was elected to the board of the Associated Equipment Co., Limited, and was thereupon appointed managing director of the company, a position which he held until November, 1933, when he became chairman, retaining until 1944 the managing directorship. After the war of 1939-45 he was closely concerned in the acquisition by A.E.C. of a controlling interest in Crossley Motors, Limited, Maudslay Motor Co., Limited, and Park Royal Vehicles, Limited, and after the Associated Equipment Co., Limited, was turned into a holding company on October 1, 1948, as Associated Commercial Vehicles, Limited, he continued as chairman until March 31, 1951, and thereafter remained on the board. From 1920 to 1923 he served as a member of the council of the Motor Trade Association, and was president of that body for 1922 and 1923; he also served on the council of the Society of Motor Manufacturers and Traders from 1920 to 1924, and was a representative of the motor industry on the Advisory Council of the Board of Trade from 1935 to 1938. Latterly he has been chairman and managing director of the British Gear Grinding and Manufacturing Co., Limited, chairman of Associated Acceptances, Limited, and Hardy Motors, Limited, and a director of the Associated Equipment Company of Canada, Limited. Following the formation of British United Traction, Limited, in 1946 by the A.E.C. and Leyland Motors to collaborate in building and selling trolleybuses and railcars Mr. Reeve served on its board for some years. He received the C.B.E. in 1937 and is a liveryman of the Coachmakers and Coach Harnessmakers Company. Our portrait is a reproduction of one painted by Francis E. Hodge and presented to Mr. Reeve to mark the relinquishing of the A.E.C. managing directorship.

## NOTTINGHAM BUS ROUTES

### Clifton Estate Licences

### MONOPOLY OVER NEW BRIDGE

**I**N a reserved decision, the East Midland area Traffic Commissioners have granted a road service licence to Nottingham City Transport for a group of five bus services between Broad Marsh bus station and points in the Clifton housing estate (on the south side of the Trent), have refused South Notts Bus Co., Limited, services to the same points, and have decided that South Notts and West Bridgford U.D.C. should operate jointly via Trent Bridge (the existing route) into Clifton, to the exclusion of Nottingham City Transport. The applications arose from the construction of the new Clifton Bridge across the Trent, which will shorten the approach to the new estate and allow of routes wholly within the Nottingham boundary. Hitherto they have entered West Bridgford en route and the operations were divided between Nottingham, West Bridgford and South Notts on a 55:20:25 mileage basis.

The Commissioners recognise that the Corporation has a prior claim to operate stage carriage services wholly within the city in respect of routes on which other operators have no present claims. The fact that South Notts has at present a 25 per cent share of the traffic along the existing route cannot give it a right to a share of the estate traffic which might pass over Clifton Bridge. It has never served any part of the proposed new route north of Clifton Bridge whereas this section of route is wholly within an area which the Corporation might expect to serve as and when the territory is developed. The fact that the new bridge was built by the Corporation at its own expense does not give it monopoly rights over the bridge.

#### West Bridgford Position

West Bridgford U.D.C. has not claimed nor can reasonably claim any share in the service between the estate and Nottingham over Clifton Bridge as no part of the route lies within its urban district. The Council expressed its desire to retain the present proportion of any services operating between the estate and Broad Marsh. The Commissioners, however, do not consider that the proportions of the services to be run by the three operators between the estate and Nottingham as laid down by the Commissioners in 1952 hold good for all time and in any circumstances. It is in the public interest to divert some of the existing journeys via Clifton Bridge and the Nottingham undertaking should run via the new route.

#### Apportionment on Journey Basis

No clear estimate of the needs over the two routes can at this stage be assessed with any degree of certainty, but the Commissioners consider that now that the new bus route has been approved, the proper course is for each of the parties to start with roughly their existing quotas. The three operators have hitherto calculated their share of traffic on the joint services on a mileage basis. This may not now be appropriate in view of the difference in mileage of the alternative routes (5.61 and 4.96 miles), and the Commissioners will be prepared to consider one based on the number of journeys. The three parties should co-ordinate departure times. The subsequent future requirements on the two routes must be determined primarily according to public need even if the present shares of traffic between the operators are thereby altered.

Nottingham City Transport applied, among other fare alterations, for a reduction in the present fare as between Pastures Avenue, Clifton Estate, and Broad Marsh from 7d. to 6d. single in order, it stated, to bring this fare into line with the fare scale authorised in respect of the services of the undertaking generally. The Commissioners are unable to accept the view that the new service can be treated otherwise than as an integral part of the Clifton Estate—Broad Marsh services as a whole and are not prepared to approve the fare-table proposed, which would give an unfair advantage to the city transport undertaking in respect of terminal to terminal traffic. In other instances, the authorised fares between common points will be maintained.

#### Consent Application

The hearing of part of an application by West Bridgford for consent has, by request of the Urban District Council, been adjourned. Its clerk stated at the hearing that if the Nottingham City Transport service along Wilford Lane and Trent Bridge ceased, the joint running agreement with the city Corporation would no longer be an effective authority for the West Bridgford undertaking to run buses outside its boundary. To enable the undertaking to continue to operate on that part of the route between the Clifton Estate and Broad Marsh which is outside the urban district, the Commissioners have decided to grant certain of the applications for consent as indicated below. Nottingham will surrender its licence to run via Trent Bridge and Wilford Lane.

#### The Routes

The Nottingham application was for a road service licence in respect of stage services between Nottingham (Broad Marsh) and Clifton Estate, with termini at: (a) Southchurch Drive—Green Lane, (b) Farnborough Road—Glenloch Drive, (c) Southchurch Drive—Rivergreen, (d) Green Lane—Langstrath Road and (e) Farnborough Road—Pastures Avenue, via Clifton Bridge. South Notts applied for similar services, and an application for consent under sections 101 and 102 of the Road Traffic Act, 1930, was made by the council of the Urban District of West Bridgford to run public service vehicles in the city of Nottingham to Old Market Square and Broad Marsh and along Wilford Lane to Clifton destinations. It is the Old Market Square out-running application which has been adjourned. This is the terminus of Nottingham—West Bridgford joint services from West Bridgford destinations.

The Clifton Estate is at present linked with central Nottingham by a joint service of stage carriages provided by Nottingham, West Bridgford and the South Notts company between termini in the estate and Nottingham (Broad Marsh Bus Station), via Wilford Lane and Trent Bridge. In addition, South Notts operates services of stage carriages between Loughborough and Nottingham and between West Leake and Nottingham, both of which run along one side of the estate and thence along the same route as the joint service as far as Canal Street and thence to Huntingdon Street Bus Station. The estate became part of the city on April 1, 1952, and the joint service commenced on October 29, 1952, when the population was approximately 2,800. The estate grew rapidly and is now fully developed, with a population of 26,000.

## Versatile Diesel Railcars

(Continued from page 3)

m.p.h. on a gradient of 1 in 75, a performance that was the more impressive in that the rail was fairly heavily iced at the time.

### General Arrangement

As has been said, it was found desirable to concentrate on utilising a single power unit per power car as the first stage of development. The torque converter is mounted directly to the engine and this unit is carried in a sub-frame on a shear-pad mounting, which has proved to give a very quiet and vibration-free installation. The converter fluid passes through a heat exchanger so designed that

and fan design being provided to meet all operating conditions, with interior coach heating adjusted to suit ambient temperature conditions. Controls are of the conventional type and are supplied by British United Traction, the throttle control operating a throttle motor of the standard B.U.T. type. The gearbox controller has been modified to provide for the use of automatic shift in the gearbox.

### Self-Contained Power Cars

The running units have been mounted in the underframes of the coaches with a minimum of modification and at the expense of a somewhat reduced clearance under the engine section. Graviner fire-extinguishing equipment is fitted and still further to reduce the risk of an underfloor fire spreading to the coachwork, a lipped sheet-steel tray into which has been poured a 2-in. thick layer of cement mastic has been interposed between the frame and body. This insulating layer also has the effect of reducing interior noise and vibration to a remarkably low level.

The power cars are self-contained, with a driver's control desk and seat fitted at one end of each car in the luggage-brake or other end compartment as appropriate. The driving end has been modified by the fitting of a domed canopy and end panels incorporating a train indicator number, headlamps and deep windows on each side of the corridor connection, and the corridor connection itself has been covered by a quickly detachable curved and glazed blanking plate, giving a generally attractive

frontal appearance.

A full series of test data was obtained by fully instrumenting one car at an early stage of development and to obtain figures of tractive effort, statimetry were fitted on the torque reaction members on the driving axles. It was thus possible to achieve full information on the adhesive ability of single- and double-axle drive, the statimetry having proved a simple and cheap method of obtaining what in effect can be obtained from a dynamometer car. All temperatures were fully recorded on engine coolant, lubricating oil, torque converter coolant and so on, and a slip indicator provided on the driver's instrument panel showed when wheel slip was experienced. On test, it was found possible to stall the car under full engine power for approximately two minutes before the torque converter fluid temperature exceeded the predetermined maximum, and to give some warning to the driver, a warning light is provided on the dash panel for this purpose.

### The Engine

The Leyland six-cylinder direct-injection diesel engine has bore and stroke dimensions of 5½ in. and 6½ in., giving a swept volume of 926.2 cu. in. (15.2

litres). In unblown form it develops 230 b.h.p. at 1,900 r.p.m. and maximum torque of 700 lb./ft. at 1,150 r.p.m. In this application it is turbocharged and, with the compression ratio raised from 14 to 1 to 14.8 to 1, it is set to give 275 b.h.p. at 1,800 r.p.m. and 840 lb./ft. torque at 1,300 r.p.m. The turbocharger is the Holset machine, employing an inward-flow turbine and centrifugal compressor. Exhaust gases are fed to the turbine through divided manifolds to ensure even distribution and escape to atmosphere through a flexible pipe and vertical straight-through silencer housed in a ventilated and insulated duct in the driving compartment of the car. Specific fuel consumption is between .35 pt. per b.h.p.-hr. at 1,600 r.p.m. and .37 pt. per b.h.p.-hr. at 1,100 and 1,800 r.p.m. and maximum b.m.e.p. is 137 p.s.i. at 1,300 r.p.m.

Salient features of the O900 engine are monobloc cast-iron crankcase-cylinder block with shoulder-located prefabricated wet-type liners and nitrided crankshaft carried in seven copper lead-lined bearings; Stellite-faced valves and seats and sodium-cooled heads and chromium-plated stems to exhaust valves; five-ring toroidal-cavity heavy-duty pistons; twin axial-engaged starter motors with a synchronising switch for attachment to the car frame; and gear-driven camshaft and auxiliaries. C.A.V. fuel-injection equipment includes an injection pump with all-speed hydraulic governor, mechanical fuel-lift pump, triple-bowl paper-element filters and a stop solenoid to provide for electric remote control. A tachometer generator is driven from the fuel pump drive shaft.

The pressure lubrication system embodies a full-flow filter and a built-in oil cooler and a centrifugal filter is also fitted on the pressure side of the system. A scavenging pump transfers oil from a small sump at the rear of the engine to the main sump, which has a capacity of 6½ gal. A gear-driven centrifugal pump circulates coolant through the torque converter fluid cooler to the rear of the cylinder block and thence to the oil cooler, whereafter circulation continues round the heads of the cylinder liners to the cylinder heads, where it is directed at exhaust ports and injector sleeves, into the main cylinder block and out through a manifold on top of the block.

### Engine Mounting

The engine is supported on rubber sandwich pads, two at the front attached to the timing backplate and two at the rear attached to the flywheel housing. Both

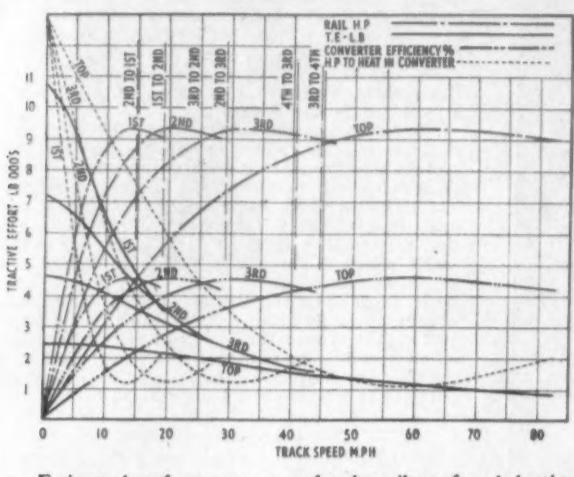
pairs are inclined at suitable angles to give the correct axis of oscillation and are bolted to a sub-frame fabricated from pressed-steel sections. Lipped mounting plates are provided at the front and rear of the sub-frame for attachment to the car underframe. A rubber-bushed fore and aft reaction stay, complete with bracket for attachment to the underframe, is fitted on top of the engine.

Twin oil-bath air cleaners of large capacity are fitted forward of the engine and connected to the supercharger air inlet by flexible pipes. The air inlet to the filter is situated in the side of the car just below waist rail level.

The engine coolant radiator has horizontal-flow tubes and is fitted with a hydrostatic fan drive and hydrostatically operated shutters. Drive for the fan is by a positive-displacement pump which is engine driven and coupled hydraulically to a constant-displacement hydraulic motor on which the fan is mounted. A controller, sensitive to the coolant temperature, governs the speed of the motor and also the position of the shutters. When the temperature rises, the thermostatic controller opens to allow hydraulic fluid to drive the fan motor and also to operate the mechanism that controls the shutters. The oil tank containing the hydraulic fluid has a magnetic filter. Included in the cooling system are two water tanks—a header tank mounted high in the car and a small tank at floor level which houses the float switch which stops the engine if the water falls below this level. The system has been found successfully to maintain engine temperature within a predetermined range under all conditions of operation.

### Transmission

The torque converter is a single-stage Schneider converter coupling supplied by Self-Changing Gears and is unit mounted with the engine. It has a stalling ratio of 3.05 to 1, has a rating of 400 h.p. at 2,100 r.p.m. and weighs approximately 450 lb. The main functional parts are the pump, the turbine and the reaction member, all of which are single-piece aluminium castings. Engine power is transmitted from the converter pump to the turbine which is opposite the pump and is connected to the



Estimated performance curves for the railcar after deducting 7 1/2 per cent power for auxiliary drives and assuming 85 per cent overall mechanical efficiency

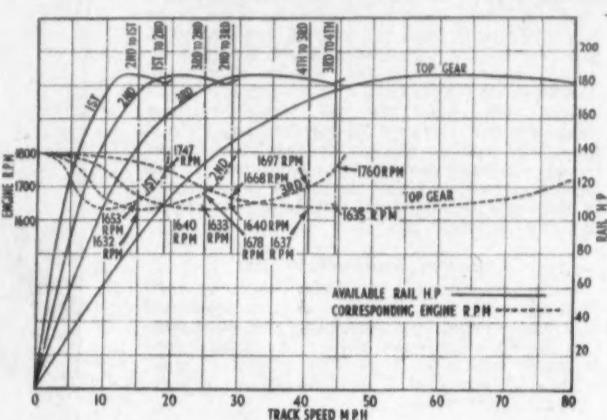
it is in circuit with the automatic temperature control of the engine cooling water. The bi-directional gearbox, which is located between the torque converter output and main gearbox input, has the feature that it automatically unloads if one unit has failed to operate in its correct direction. This made it necessary for the main gearbox to be capable of operation in either direction. The combination of the single-stage converter and four-speed gearbox gives approximately 90 per cent efficiency throughout the operating range, at virtually constant engine speed and constant rail horsepower. The introduction of fully automatic control of the gearbox has made it possible for only the peak of the efficiency curve to be utilised without any action by the driver.

With regard to engine cooling, it was felt that automatic temperature control was a desirable feature, and therefore a radiator of the Serck type has been adopted in conjunction with the Behr hydraulic fan drive. The thermostat controlling the fan unit operates at 85 deg. C. on the inlet water to the engine and until that temperature is reached the fan is at rest and the shutters are fully closed. The internal heating of power cars is derived from the engine cooling system, adequate radiator area

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### The Engine

The Leyland six-cylinder direct-injection diesel engine has bore and stroke dimensions of 5½ in. and 6½ in., giving a swept volume of 926.2 cu. in. (15.2



The estimated available rail horsepower related to engine speeds under full load conditions makes clear the steadiness of the acceleration and the small range of engine speeds required

output shaft. The reaction member between the pump and the turbine is mounted on a freewheel, which allows it to take the reaction during conversion and to move with the pump and turbine when the coupling point is reached. Torque ratio changes automatically with load and without interruption to the flow of power.

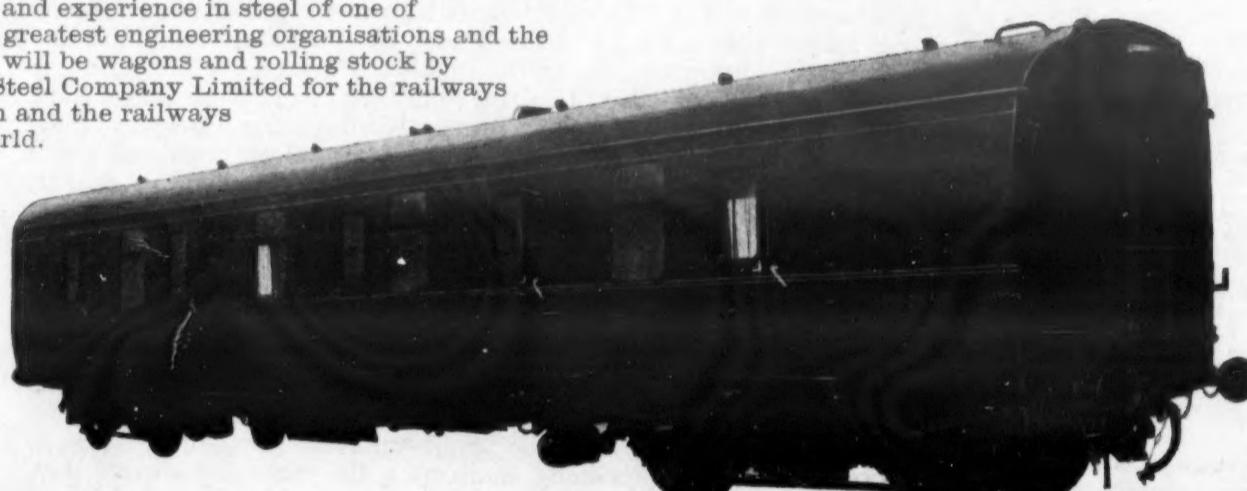
A 20-gal. reserve tank is fitted in the converter fluid system. Fluid from this is drawn for the converter by an engine-driven gear pump, passing through cored passages in the casing to the converter and leaving through a pressure control valve mounted on the fluid cooler. After passing through the cooler it returns to reserve tank. Temperature

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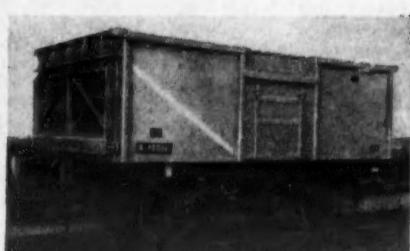
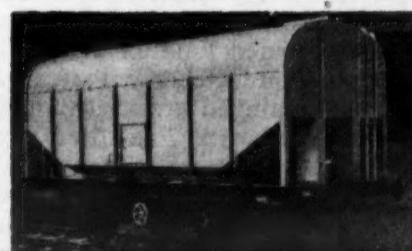


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switches are fitted in the circuit to operate warning lights to indicate when the maximum operating temperature has been reached. Hydraulic fluid is cooled by an oil-to-water heat exchanger which is mounted on the engine flywheel housing and is in circuit with the engine cooling water.

#### Auxiliary Drive

The drive from the converter to the auxiliary drive assembly is taken through a propeller shaft which incorporates a roller-type freewheel. Immediately behind the freewheel is an auxiliary drive assembly which is fitted with pulleys at the front and rear for driving an air compressor and two dynamos. With this arrangement, the compressor and dynamos are driven either by the motion of the train or by the engine when in neutral gear. The propeller shafts linking the bi-directional gearbox, main gearbox and inner bogie axle are of the tubular type with Hardy Spicer needle-roller bearing universal joints, while the inter-axle shaft has rubber couplings.

The S.C.G.-designed and produced bi-directional gearbox has a reduction ratio of 2 to 1 forward and reverse. It incorporates epicyclic gearing, the forward and reverse reaction members being selectively held by air-actuated band brakes, which are of a special double-lap type requiring no setting or adjustment. An automatic safety device is incorporated in the unit which prevents a change of direction being selected when the vehicle is in motion. Lubrication is provided by two gear-type pumps, the output pump being designed to operate in both directions of rotation. The unit is anchored to the underframe of the railcar by means of resilient mountings.

The Self-Changing Gears four-speed gearbox is of the epicyclic type in which first, second and overdrive fourth gears are obtained by means of a series of compounded epicyclic gear trains and the direct drive gear by a plate clutch. Gear ratios are 2.33, 1.55 and 1 to 1, and 1 to 1.87 overdrive. The gearbox is of a direct air-operated type in which separate cylinders are provided for each of the indirect gears and the direct drive clutch. The brake bands which are applied for the actuation of the indirect gears are designed to give equal characteristics in both directions of rotation. Lubrication of the unit is by a gear-type pump mounted on the front casing and a plunger pump driven from the output shaft. This unit is mounted to the underframe of the vehicle by resilient mountings.

#### Automatic Gearbox Control

The Self-Changing Gears automatic control equipment employs two generators driven from the output shaft of the gearbox, and a relay panel situated in the driving cab. As the generator voltage rises and falls according to the speed of the vehicle, relays are operated in sequence which energise electro-pneumatic valves to select the appropriate gear ratio. The pattern of gearchanging is modified by the throttle so that higher gears are used at lower speeds on reduced throttle openings.

The final drive is also designed and produced by Self-Changing Gears, Limited, and consists of two units in one bogie, each with a ratio of 2.143 to 1. The one-piece casings are made in high-quality cast steel of comparatively light section, with scientific

ally placed ribbing to obviate distortion due to gear load. The running gear consists of spiral bevel gears which are case hardened and lapped in sets. The input bevel pinion of the inner unit drives the bevel wheel mounted on the axle, which in turn drives an output bevel pinion. Connecting the two units is an inter-axle propeller shaft. The bevel wheels are mounted on opposite sides of the bogie centre line of the axles to synchronise axle rotation. Lubrication of each unit, which holds 5 gal. of oil, is by a gear-type pump driven by the axle, the oil being delivered to the bearings through an external oil pipe, while an internal oil pipe sprays lubricant on to the bevel wheels. The units are axle mounted and to take the torque reaction a plate-type torque arm is fitted, with rubber bushes.

#### Train Controls

Engine speed and transmission controls of British United Traction type, with minor modifications, are mounted on the driver's desk at right and left-hand sides respectively. The engine control has four positions in addition to idling and operates magnet valves for the throttle motors in each car through relays. A deadman's handle is incorporated in the switch. The transmission controller is a dual switch providing gear and direction control. The gear switch has two positions—drive and neutral—and is used in conjunction with the automatic V.S. control, the standard B.U.T. controller having been modified for this purpose. The direction switch has three positions—neutral, forward and reverse—and is operated by a detachable handle which can only be inserted or removed when the switch is in the neutral position. A mechanical interlock between the direction and gear control switches prevents movement of the direction switch when the gear switch is in the drive position. The lever for the direction controller is also used for the battery-isolating interlock.

#### Automatic Shutdown

Two vertical control panels, also modified B.U.T. type, are fitted, one on the left containing oil-pressure indicator lights for eight engines; train control indicator; V.S. control (throughout train) indicator; local torque converter fluid temperature and train torque converter; two engine start buttons (one for odd-numbered and the other for even-numbered engines in the train); one engine stop button covering all engines; and tablet bell buttons. The right-hand panel contains engine tachometer; car speedometer; wheel-slip indicator; duplex air-pressure gauge for brake cylinder pipe and emergency pipe; and a single air-pressure gauge for the main air reservoir. Provision is made for automatic engine shutdown under conditions of loss of coolant, low oil pressure or fire. It is effected through the engine isolating trip switch, which isolates the starter circuit and energises the stop solenoid. In addition to the normal control from the cab, each engine can be started or stopped at track level by push buttons located on the underframe at each side of a car. Push buttons are also provided in similar positions to enable an engine to be isolated from the local and train controls. After an automatic shutdown or isolation of an engine from track level, the isolating switch must be reset by hand before the engines can be restarted.

## Last of the B.O.A.C. Yorks

(Continued from page 7)

Johannesburg Springbok service, operating through Tripoli, Cairo, Khartoum and Nairobi with a call at Salisbury (Southern Rhodesia) during the southern hemisphere summer. The Cairo service was extended to Basra, Karachi, Delhi and Calcutta on the last day of 1945. The next three years saw them start new services to Karachi, Cairo, Colombo (via Bombay), Delhi, Singapore, Nairobi, Dar es Salaam, Basra, Accra (via Tripoli), Kano and Lagos, and Teheran (via Rome and Cyprus). By the end of 1948 the York was operating four times a week to Cairo, two services having called at Rome and two at Tripoli. During 1949 the aircraft operated a service through Rome to Lydda (Palestine) for a short time. These services operated for varying lengths of time and some were not withdrawn until 1950.

On the merger with B.S.A.A. in 1949 B.O.A.C. acquired more York routes, for since 1946 Yorks had operated to the chief cities of South America and to the Caribbean and it fell to them in the months immediately after the merger to keep open the South American routes until modern replacement aircraft could be provided. They were superseded on the South American east coast route and across the Andes from Buenos Aires to Santiago in February, 1950, by Argonauts.

#### Varied Operations

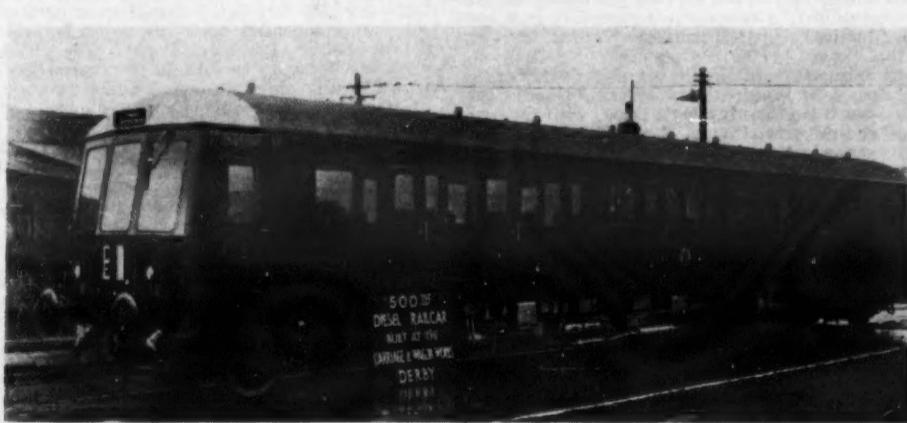
The achievements of the Yorks were not limited to regular passenger operations. They carried thousands of tons of cargo, mail and aircraft engines and spares to many points throughout the world. In 1947 they were among the aircraft engaged in evacuation of refugees during disturbances in India and Pakistan, when record loads of passengers were carried on each journey. A second career started for the Yorks after they had been withdrawn from passenger service in 1950. They

carried out a variety of supplies flights, freight services, special charters, and one of them was converted to be a special flying classroom for the training of navigators.

A routine commitment for many years was the operation of the freight service between London and Singapore. Until the last few months some six complete crews were flying the Yorks. They took it in turn to be on standby for a week. Flight captain of the Yorks for the major part of their service after 1950—from 1952 to 1956—was Captain C. Moore. He had previously flown in Yorks from 1945 to 1949.

Figures given by the B.O.A.C. operational research branch have had to be based on somewhat incomplete records dating, in the main, from 1945. The Yorks had flown a total of 226,996 hours, of which revenue hours accounted for 190,372. They had covered a total of 44 million miles, 37 million of them being estimated revenue miles. They had carried more than 90,000 passengers and the passenger miles totalled over 276 million. Of the Yorks used on passenger flights, the peak utilisation for all aircraft was 6½ hr. a day over a period of one month.

It was announced this week that Airwork, Limited, has acquired a substantial interest in the air transport and engineering group of companies of Mr. F. A. Laker. These include Air Charter, Limited, which operates car ferry services from Southend to Calais, Ostend and Rotterdam, a number of trooping contracts and a substantial freight charter business with a fleet of 18 aircraft. Another Laker company, Aviation Traders (Engineering), Limited, built the Accountant, the aircraft with two Rolls-Royce Dart turboprop engines which was seen at the last Farnborough Show.



The 500th diesel railcar completed at the London Midland carriage and wagon works at Derby recently. The works produced the first lightweight diesel set in April, 1954, and the first steel diesel set in October, 1956. The cars now being built at Derby have a welded all-steel body, and are operated as three-car units, comprising two motor cars with an intermediate trailer vehicle, each motor car being powered by two 150-h.p. B.U.T. underfloor engines.

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## DELIVERY NEXT DAY BY EXPORT EXPRESS

MODERNISATION in British Railways brings with it not only better service but entirely new categories of service. For example: because of the increased number of wagons fitted with continuous brakes, and by improved telecommunications, British Railways now run their new 'Export Express Service'. Traffic by this service is assured of next-day arrival at certain of the principal London docks from 75 special centres throughout the country. And to deal with this new service, British Railways have appointed a special liaison officer at the port of London.

### From cranes to cordials

There is nothing British Railways cannot transport; and everything is dealt with as a separate problem. For transporting building materials, chemicals and powdered bulk there is equipment designed for the job: for perishable goods, highly insulated containers—the most efficient of their kind in Britain. If you have some special requirements for transporting liquid in bulk, your own tank wagons can be constructed.

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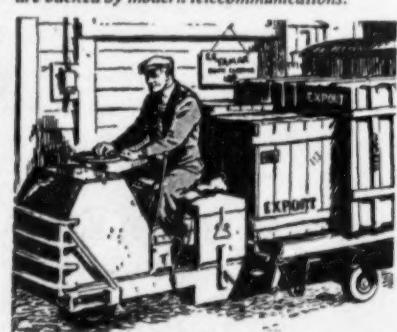
Most of the freight work is done at night when the lines are quieter. And more and more wagons are now being fitted with vacuum brakes. Not only does this make for greater safety, it also means freight trains can run at near-express speeds, and so increase line capacity and improve punctuality. Whatever your product—milk, beer, coal, fruit, meat, livestock—whatever your problem, you can rest assured that British Railways will give you excellent advice and first class service. Just get in touch with your local Station Master or Goods Agent.

**GREEN ARROW SERVICE** Operating for both overseas and certain home freights in full wagon loads, this service enables you to register consignments all the way to the destination station or port for only 2/6d. Ask your local Station Master or Goods Agent for full details.

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## SEA LINKS WITH THE CONTINENT

### 13—Holland Steamship Company (Cont.)\*

To serve the Exeter area provision is made by the Holland Steamship Company, or H.S.M., to use the initials of its Dutch title, to call at Teignmouth if sufficient inducement offers. Traders are recommended to apply to H.S.M. agents if interested in loading or discharge at this small port.

Plymouth has a vessel once weekly coupled with the Portsmouth and Bristol Channel run, Saturday being the usual day of arrival and sailing. Outward cargo can be accumulated any time during the week previous. Discharging and loading of all H.S.M. cargo takes place at Trinity Pier, Millbay Docks, owned by British Transport Docks and the berth is approachable at all states of tide. Bonded warehouses and H.M. Customs storage sheds are situated alongside ship and every facility is available for quick handling of cargoes. Normally cargo is loaded or discharged through warehouse, although in the case of bulk consignments this can be arranged direct from or to rail wagons or lorries alongside the ship. The H.S.M. agent is W. D. Tamlyn and Co., Limited, 16 Parade, Plymouth.

A South Coast and Bristol Channel vessel calls at Fowey or Par as required. Any surplus cargo is taken by chartered vessels. The former considers itself principal port for the shipment of Cornish china clay; it is controlled by the Fowey Harbour Commissioners, through the harbour master. The loading berths are the property of British Railways, and are managed by its quay superintendent. All vessels are required to stem for loading (or discharging or bunkering) and the berths are available to them in order of stem. There is no preference or reserved liner quays. Lifts of maximum three tons

activities were fully detailed in the article in this series on Palgrave Murphy activities (*MODERN TRANSPORT*, January 12 and April 13, 1957). In Belfast the Holland Ireland Line vessels usually discharge in Dufferin Dock. This lies in the centre of the deep water system and has covered sheds and is served by rail transport. There are no shore cranes, but the port has facilities for lifting of from three to 150 tons. The local agent is G. Heyn and Sons, Limited, Head Line Buildings (P.O. Box 108), Victoria Street, Belfast. There is a weekly service between Amsterdam and Belfast direct or via Dublin. The vessel usually arrives on the Tuesday and sails either the day of arrival or the following day.

Amsterdam—Mersey

A weekly sailing leaving Amsterdam every Thursday arrives in Manchester on Mondays and sails on Wednesdays. This vessel usually arrives Liverpool on the berth for discharging every Thursday morning for an a.m. start and sails for Amsterdam Friday evenings. In Manchester the docks are situated at Salford, which is reached from the sea by the Manchester Ship Canal. The usual berth at No. 7 Shed, 7 Dock, has open sheds and railway sidings with connections to anywhere in the United Kingdom, so that delivery ex steamer can be made direct to railway wagon, lorry or overside to craft.

Export cargoes are liable to canal tolls in accordance with the Manchester Ship Canal schedule and an additional charge is made for cragage for lifts over three tons. Import cargoes are subject to canal tolls, plus quay portage as per M.S.C. schedule. This quay portage can be saved if delivery is made direct to railway wagon, lorry or craft. A 120-ton floating electric crane and a 60-ton floating self-propelled crane are available for heavy lifts. British Amsterdam Maritime Agencies, Limited, 40 Brazenose Street, Manchester, 2, has its own office to act for this service. This also applies in Liverpool where the office is situated at 26 Chapel Street, Liverpool, 3.

H.S.M. vessels trading in the port of Liverpool have the regular use of a berth in the south section of Liverpool Docks. This is usually Middle West Harrington Dock. This berth is easily accessible by road, rail and barge. Local charges consist of Mersey Docks and Harbour Board dock and town dues only for outward cargo and M.D. and H.B. dues and master portage for inward cargo. Rates may be had on application. Cargo is handled by ship's gear and also overhead roof cranes, whilst facilities exist for handling heavy lifts up to 150 tons by means of floating cranes.

Amsterdam/Scotland

Two services per week are scheduled to Leith giving Monday and Thursday arrivals from Amsterdam with Tuesday and Thursday sailings via Grangemouth. The latter port has Wednesday and Friday arrivals with Wednesday and Saturday departures. These are operated in conjunction with Gibson-Rankine Line. At Leith the docks are owned and managed by the Leith Dock Commission. Berth 5 Shed, Albert Dock, is the H.S.M. agent.

### Bristol Channel Facilities

Bristol Channel schedules are usually arranged on the following basis:

Bristol—Arriving each Monday and sailing generally on Tuesday.  
Newport, Mon.—Usually every Tuesday or Wednesday.  
Cardiff—Every Wednesday.  
Swansea—Usually arriving every Thursday from Newport and Cardiff, sailing on Thursday or Friday.

It may be noted that two refrigerator vessels are in the Bristol Channel trade. At Bristol H.S.M. uses the City Docks, one of a group of docks (Avonmouth, Portishead and Bristol City Docks) controlled by the Port of Bristol Authority. V Shed, Canons Marsh, with modern double-deck transit sheds with rail connections and equipped with 2-ton cranes, is the usual berth. An 18-ton crane (Canons Marsh) and 35-ton crane (Prince's Wharf) are available for heavy lifts.

Imports and exports can be dealt with direct or from inland waterways transport serving the Midlands and Bristol Channel ports and direct calls at Avonmouth can be arranged for shipments of 200 tons and upwards. Turner Edwards and Co., Limited, 39-40 Queen Square, Bristol, 1, is the local agent here and also at Newport.

That port in the Bristol Channel is controlled by British Transport Docks (South Wales Ports). At both Alexandra North and South Docks modern appliances are available for handling general cargoes. All berths are rail connected and lifts up to 30 tons can be dealt with by shore cranes and up to 100 tons by floating cranes. All cargo for export to Amsterdam is received at No. 5 Shed, Alexandra South Dock. There is still a shortage of warehouse accommodation but the port is very suitable for handling large parcels and bulk cargo. The address of Turner Edwards is 84 High Street, Newport, Mon.

### Cardiff and Swansea

In the port of Cardiff there are excellent rail connections to all industrial areas and the road transport system is good and able to cater for all kinds of traffic including heavy lifts. Available cold storage is capable of dealing with 10,000 tons of cargo, while as regards heavy lifts, there are floating cranes with a capacity of up to 100 tons. The Holland Steamship Company uses the Queen Alexandra Dock where the usual berth is H Shed. Goods may be stored in this warehouse and deliveries are made and effected from same as and when required. Once again Turner Edwards and Co., Limited, 55-56 Exchange, Cardiff, acts as H.S.M. agent.

At Swansea, however, the agent is T. H. Couch, Limited, 6-6a Wind Street, Swansea, Glam. The usual berth is C Shed, King's Dock, with enclosed shed and rail-served quay, three 2-ton cranes, one 3-ton crane and one 70-ton crane. King's, Queen's, Prince of Wales and South Docks (all of modern construction) are well equipped and provide excellent accommodation and facilities for all classes of cargo. There are 130 hydraulic and electric quayside cranes with capacities ranging up to 70 tons (one of 100 tons available if required), to deal with general cargo.

### Amsterdam—Ireland Services

Services to the Republic of Ireland and Northern Ireland are operated as The Holland Ireland Line. These are in conjunction with Vereenigd Cargodoorskantoor (V.C.K.) on which the motor ships *Trito* and *Theano* are employed. Also interested is Palgrave Murphy (Shipowners), Limited, 17 Eden Quay, Dublin, and sailings are weekly to and from Dublin, fortnightly to and from Cork and if sufficient inducement offers to Waterford. These

convenient centre for goods consigned to Glasgow and the west of Scotland. Local charges consist of quay portage, loading to vehicles and Leith Dock dues which vary according to the class of goods involved.

At Grangemouth the docks are owned and managed by British Transport Docks. The H.S.M. vessels are normally berthed in the Carron Dock, where there are three sheds and hydraulic cranes. Lift cranes are also available up to 35 tons. Local charges consist of quay portage, loading to vehicles and dock dues. At both ports the H.S.M. agent is Furness Withy and Co., Limited, the addresses being Atlantic Chambers, 35 Constitution Street, Leith, and 83 Lumley Street, Grangemouth, respectively.

### Service to the Humber

Twice weekly there is a sailing from Amsterdam to Hull and vice versa. The H.S.M. berth in Hull is at No. 17 Shed East, Albert Dock, which berth is well equipped for dealing with traffic inward or outward by canal, rail or road transport. The Albert Dock itself is one of the Town Docks and is actually on the estuary of the Humber, some two hours steaming time from the river mouth at Spurn. Cranes capable of dealing with heavy lifts up to 40 tons and 80 tons respectively, are situated immediately adjacent to 17 Shed. It is possible to handle lifts up to 120 tons in the port.

Two agencies operate in Hull namely, Ellerman's Wilson Line, Commercial Road, Hull, which

(Continued on page 16)



## REGULAR BUS RUNNING

### A Major Ingredient of Public Service

By J. B. BURNELL, C.B.E., J.P., M.Inst.T., Operating Manager (Central Road Services), London Transport\*

THE bus transport operator's business is selling travel, and one of the measures of his output is the average speed of his vehicles in service and their adherence to schedule. Other things being equal, there is every reason to expect the normal economic rules to apply. Unfortunately in most large towns other things are not equal, and in many cases the peak passenger flows, especially in the evening, coincide with periods of very heavy congestion, thus depressing speeds and frequently playing havoc with the timetable—in other words, cutting production. The factory which turns out more products but cannot sell them owing to a faulty market technique will quickly find itself in the red. For the bus operator full production implies adherence to a running schedule which has been designed to match the passenger demand.

In London the two passenger peaks, morning and evening, dominate our operations to the extent that the satisfying of these inflated demands for transport virtually dictates our vehicle and crew requirements. Of the 5,700 service buses required for the peak operations, between, say, 7.0 and 9.30 in the morning and between 4.30 and 6.30 in the evening, some 1,750 are standing in the garages during the off-peak periods. But now something is happening which is causing serious concern.

Since 1952 there has been a yearly decline in passengers carried on London buses and trolleybuses, more marked in the off-peak than in the peak periods. Thus we are faced with the position of an increasing loss of what has been called the "jam" with every prospect of being left with what we may find to be only "bread and margarine," with 10 per cent butter if we are lucky. We in London are very conscious of the dangers of drifting into what my chairman recently referred to as a "peak-hour-only-bankruptcy."

#### Peak-Hour Service Only?

What then is the answer? Will it come to the point of operating in the "peaks" only and perhaps giving only a skeleton service at other times? It is quite obvious that so far as personal convenience is concerned, a public service vehicle cannot normally compete with a private car. When to convenience is added pride of ownership and that feeling of social superiority that car riding normally engenders, it is even more apparent that the bus is likely to come off second-best. Nevertheless, London Transport has decided that an off-peak service is a public requirement, and in most respects a necessity, and, given a fair chance, we can count on a satisfactory public response.

To provide such a service there are certain minimum standards that an operator will neglect at his peril. Obviously, to start with, the vehicle must be right, and for our town services we think that the double-deck bus is the one for us. Our present "red" (Central area) fleet is giving sterling service. The challenge of the private car is increasing, however, and it is obvious that, so far as possible, the standard of bus design and equipment must be improved if the custom of the floating traveller, and he may incidentally be a car owner, is to be retained.

#### Private Car Comfort

With a view to meeting this challenge we have developed the new Routemaster bus, which will be in regular service at the beginning of 1959, when the first of our remaining trolleybuses are to be replaced. We hold to the view, more important than ever in these days of car competition, that the passenger should be provided with a seat. In addition, the Routemaster will give ample legroom for each seat and will have heating and ventilating equipment.

Assembling the equipment and staff is one thing, but giving service is certainly another. If control of buses on the road is to be effectively carried out, there is one essential requirement, a first-rate system of communication. Our system of roadside telephones works very well and is quite satisfactory for suburban services but for cross-town routes what is really wanted is some means whereby a single person can know at any one time what is happening to each individual bus along the road, whether it is ahead of or behind schedule, if it is in a bunch of buses or is following a wide gap. Armed with such information it is clear that a central controller would be in a position to initiate action in respect of one particular bus, and—this is the crux of the matter—he could do it in relation to the state of running on the route as a whole.

#### The B.E.S.I. Device

After a great deal of research and experiment equipment has been developed which has been successfully tried out in practice and of which we have the highest hopes. This equipment is known as the bus electronic scanning indicator, or B.E.S.I. [fully described in MODERN TRANSPORT, January 4—Editor]. This is a system of remote indication which identifies individual buses passing selected points on a route.

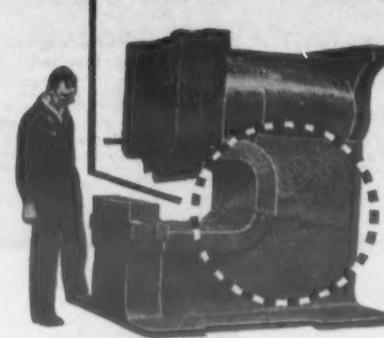
Parallel to this development has been the reorganisation of our force of officials concerned with bus running and regularity. It was seen in the first place that although the speed of buses had not increased the tempo of bus work had, in that traffic hold-ups occurred more quickly, more frequently and lasted longer. It became clear that irregularity of service, once it had occurred, tended to grow worse if no remedial actions were taken. Thus prompt action was desirable. Secondly, it was obvious that the fight to maintain regular running was a specialist's job and was likely to be best handled by a body of officials especially trained for the job with no auxiliary duties to divert them. Thirdly, it was necessary that a bus service should be treated as a whole and not broken down into arbitrary self-contained sections for supervision purposes. Fourthly, full and easy communication between points along a route must be available.

In order to cover these four main requirements it was decided to set up a new body of officials, the bus running control, eventually to include some 170 to 180 men drawn from experienced supervisory staff. It was also decided to review the timing and supervision points along the two dozen selected cross-town routes and to introduce

\* Abstract of a paper read before the Yorkshire section of the Institute of Transport in Leeds.

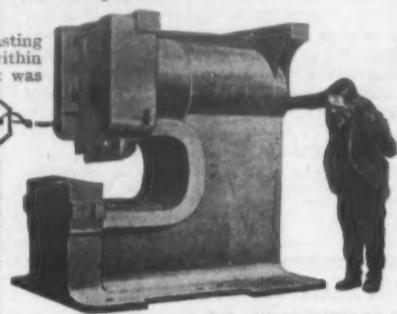
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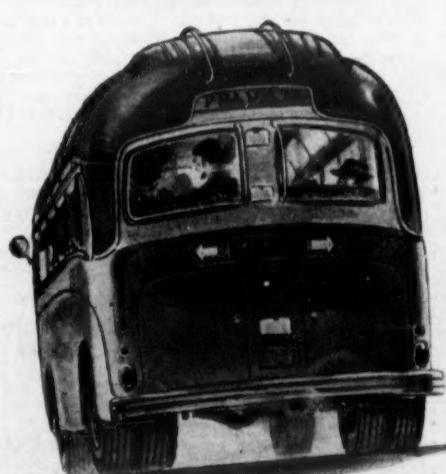
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#### COMPETITION ON THE PROBLEM OF THE HUNTING OF RAILWAY VEHICLES

IN December, 1953, the Office for Research and Experiments (O.R.E.) of the International Union of Railways (U.I.C.), proposed to the Committee of Management of the U.I.C. the holding of a competition, open to all research workers, for theoretical investigations relating to the hunting movement of railway vehicles. This proposal, which was accepted, carried the award of prizes to the best thesis presented.

The competition was launched during May, 1955. About 200 persons or institutions applied for particulars of the competition. Entries closed in August, 1956, and 17 were received.

After the study of the entries by the International Jury appointed for the purpose, it appeared that only five entries warranted serious consideration, and at their meeting on June 12, 1957, the Jury awarded three prizes. This award merely signified that the entries so rewarded did in fact conform with the conditions of the competition; none of them completely satisfied all aspects of the question posed, but they all gave solutions which merited further study. Summaries are at the close of this article.

Following the decision of the Jury, the names of the winning entrants were disclosed.

Professor R. de Possel—University of Algeria.  
M. Jean Boutefoy—traction engineer, Messrs. Alsthom, Paris.

Railway Technical Research Institute—Japanese National Railways. The distribution of the prizes by Dr. Ir. den Hollander, President of O.R.E., took place in Utrecht on July 11, 1957. The European authors were present in person, whilst the Japanese National Railway Technical Research Institute was represented by the Japanese Ambassador to the Netherlands.

**Summary of Thesis Submitted by Prof. R. de Possel**  
To our knowledge, the studies made so far on the hunting movement have in particular examined the case of linear friction and the conical type (for example, Y. Rocard), the differential system being thus linear.

Retaining the hypothesis of linear friction, but assuming the rails and tyres to be worn, according to profiles analogous to those given in the competition conditions, it is possible to represent the various functions occurring in the equations by approximate expressions, in such a way that the system is still linear but has a different form.

The term in which the conicity of the tyre intervened, namely  $\beta = 1/20$ , is replaced by an analogous term, which would take the value 0.463 for the given profiles. A supplementary term is added which arises from the variation of the direction of the perpendicular to the point of contact; this term causes another constant to intervene. The results differ appreciably from those obtained for a conical wheel, even in the case of a very slight hunting movement. We have studied these results, taking into account the rolling movement and wheel-rail flexions.

The hypothesis which compared the tyre to a cone seemed illusory to us, at least in the case of running in a straight line and of a two-axled vehicle.

When the law of linear friction leads to stability, a small irregularity in the track will give rise to a hunting movement which will damp down very quickly, as shown by the study which we have made. In the opposite case, its amplitude will increase until the linear field is left and the movement will probably tend towards a periodic one, which is the limit of a system of equations corresponding to non-linear friction.

We have introduced four different flexions to four contacts. It seems that equal flexions for each of the rails to the front wheel and the rear wheel had been considered up to now. These flexions only intervene by two linear combinations. Taking account of the rolling, the system is therefore of the eighth order. We have studied the stability of it in the numerical example proposed, at different speeds. We have compared the results with those



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obtained in the particular cases where the flexions, the rolling movements, or both at the same time are disregarded. In the latter case the solutions of the linear system are stable up to quite high speeds, whereas for conical wheels instability at any speed is the general rule.

The non-linear system which we have obtained did not seem to us to enter again into the cases studied so far. It is perhaps possible to discover their limit cycles by numerical integration, but we had no time to pursue such an investigation far enough. Appropriate means of calculation would no doubt be necessary. In finding the equations, we have not assumed a strictly uniform rotation of the axles.

Finally, there probably exist periodical solutions of the problems with shocks of the flanges against the rails, but the equations at which we arrived seemed too complicated to discuss in the time available. The examination of worn rails has, however, led us to think that this process occurs only exceptionally.

The extension of our results to the cases indicated in the competition conditions, such as dissymmetrical vehicles, to several axles or bogies, to running round curves, would not present difficulties, since the most important part of our results is relative to the case of a single axle.

#### Summary of Thesis Submitted by Mr. Boutefoy

This study aimed at examining the influence of the flexibility of the vertical suspension on the stability on track of a railway vehicle. The flexibility of the vertical suspension influences the value of the "period of rolling movement." The internal damping of the suspension was disregarded.

The equations establishing the dynamic equilibrium of the system were worked out according to the method set out by Mr. Rocard in the "Actualités Scientifiques et Industrielles," by assuming, as did Mr. Rocard, a linear relationship between the tangential force and the angle of "Pseudoslip."

In consideration of the particular rail and tyre profiles proposed in the competition conditions, it was shown that it was necessary to attribute to the conicity of tyres the value of 0.4, the latter being defined as the relation between the variations in radius of wheel and the value of the transversal displacement of the axle, which causes this variation in radius. It was also shown that as the areas of contact of the two wheels of an axle on the rails have not the same inclination on the horizontal, the supporting reactions have a transversal component which is not to be neglected and which tends to centre the axle in the track.

The application of "Hurwitz" stability conditions to this system has led to the definition of a "speed limit of stability" and to giving the value of it as a function of the principal parameters of the vehicle and of the characteristics of the track (wheelbase, moment of inertia, vertical flexibility of the suspension, period of rolling movement, conicity of the tyres, transversal stiffness of the track).

Endeavours were made to find these results by means of an experimental study on a model two-axled wagon.

Finally, the application of the calculation method to the case of a bogie vehicle was tackled.

#### Summary of Thesis submitted by the Railway Technical Research Institute, Japanese National Railways

The thesis is in two parts: one theoretical part only will be described here and one practical part.

The hunting movement is studied first of all for an isolated axle, which is perfectly free, then, for a two-axled vehicle, with the following characteristics:

the rolling of the body prevented;  
no transversal deformation neither of the rails  
nor of the wheels;

the axles executing movements relative to the body which are limited by centring devices.

The equations used are only linear and do not take into account the effect of transversal centring causing the variations of the inclination of the tangential planes at the wheel-rail contact. They are therefore only valid for the case where the wheels are perfectly conical.

The calculations lead to the determination of the limits of stability, taking into consideration connections between axles and body.

## ROAD VEHICLE INDUSTRY

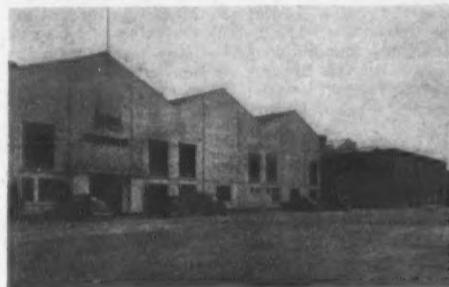
### M.I.R.A. Work Reviewed by Director

ON Thursday last week, Dr. Albert Fogg, director of the Motor Industry Research Association, described the work of the association to a large gathering of the London branch of the Institute of Road Transport Engineers and specially invited guests. After outlining the constitution and functions of M.I.R.A., Dr. Fogg went on to describe with the aid of lantern slides a number of specific research problems that had been undertaken and the progress that had been made. Research into noise, which had been going on for some years, unlike some other activities in which spectacular results were achieved, had shown no single great gain, but it had resulted, said the speaker, in a much better understanding of noise generation generally in the industry and led to some moderate improvements. On fatigue, Dr. Fogg said that although its mechanism was still not fully understood, practical work at M.I.R.A. on components and vehicles had shown that treatment of parts was generally more important than the material used. Grinding for example, particularly of

tions when required merely as a power-absorbing device but can be converted into a conventional dynamometer where desired by mounting on a pivoted platform and fitting a lever arm for torque measurement. Three sizes of machine are at present available ranging from 25 h.p. at 4,000-6,000 r.p.m. to 100 h.p. at 2,500-4,000 r.p.m.

#### Leyland Service Factory Extension

A NEW £100,000 extension has been completed at the headquarters service factory of Leyland Motors, Limited, at Chorley, where 35,000 sq. ft. of floor space has been added to bring the total covered area to some 400,000 sq. ft. Equipped with machinery, tools and jigs for the manufacture of spare parts for vehicles no longer in production, the factory also houses upwards of £3,500,000 worth of current spares and re-manufactured units which are available day and night for immediate dispatch to operators at home and abroad. The new buildings comprise a modern



A view of Leyland Motors service factory at Chorley with the new office block at right and the roof of the new packing-dispatch department visible behind it; right, interior of the packing-dispatch department

certain portions of gear teeth, was found to reduce the fatigue strength by as much as 50 per cent.

In this research, quite spectacular increases in fatigue strength of highly stressed components such as crankshafts, stub axles and half shafts had been found to follow a cold-rolling treatment. These gains had averaged 60-70 per cent and in some crankshafts had been as high as 100 per cent; many manufacturers were now using the treatment and benefiting from the use of cheaper grades of steel or lighter components while still showing gains in fatigue strength. Discussing brake fade and brake squeal, Dr. Fogg said that the mechanism of squeal was now understood and could, in fact, be avoided in design of the brake and choice of lining. M.I.R.A. had developed a simple damper which would eliminate squeal, where it did occur, in nearly 100 per cent of cases. As far as brake fade was concerned, improvements in fade resistance had been achieved with current materials but at the expense of greatly increased wear; he thought there was a wide-open opportunity for the development of a new lining material in which the property of constant friction should be the first consideration. Other current work included research into engine friction losses and body aerodynamics and the development of a hydrostatic automatic transmission unit; new test facilities included a two-bay cold room which opened up to accommodate a large commercial vehicle and in which temperature could be reduced to minus 65 deg. C. A film depicting the M.I.R.A. proving ground facilities was followed by discussion.

#### Simms in Newcastle

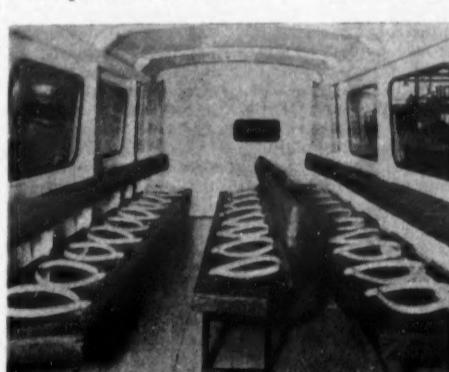
EXTENSIVE alterations occasioned by the enlargement of the Newcastle upon Tyne branch of Simms Motor Units, Limited, which have been in hand since early 1957, are now completed and the new premises are fully operative. Among many improvements incorporated are new fuel injection and electrical repair departments equipped with the most modern machines and test equipment. The branch address is 1 Falcon Street, Newcastle upon Tyne, 2. Telephone No. Newcastle 23658.

#### Safer Reversing

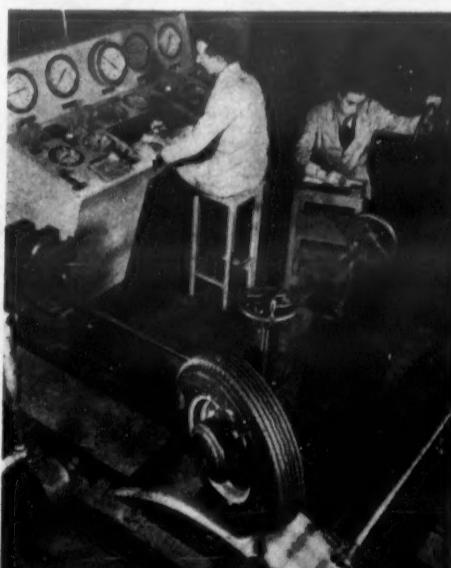
IMPROVED vision to the rear immediately behind an enclosed vehicle, which could lead to a reduction of reversing accidents, is provided by the Reversoscope, a device just introduced by Notek Electric Co., Ltd., 23 London Road, Bromley, Kent. The unit is mounted under the cab floor and provides a panoramic view directly behind the vehicle; it comprises a convex mirror, housed in a casing to protect it from dirt, and a toughened-glass viewing panel let into the cab floor. A convenient hatch is provided for cleaning. The average cost of the Reversoscope is £7 10s.

#### Cornering Force-Measuring Machine

JUST introduced by Dunlop Rubber Co., Limited, is a new machine designed to measure cornering force, the ultimate force which guides a vehicle round a corner or keeps it straight when some other force is trying to push it



Interior of Seddon 28-seat children's bus on Seddon P3 diesel-engined Twenty-five chassis



The new Dunlop cornering force-measuring machine

sideways. This cornering force machine is a precision instrument for obtaining fundamental data on the mechanical characteristics of tyres; it will provide a greater understanding of the forces that a tyre generates during normal running, forces that are essential for vehicle control.

#### Lockheed Developments in Australia

IN order to cope with the increased production of British-designed vehicles in Australia it has been found necessary to enlarge the production of Lockheed brakes, Borg and Beck clutches, Purolator filters and Thompson tie rods. The Lockheed Brake Co., Limited, announces that further land has been acquired in Sydney, New South Wales, and another modern factory will shortly be erected. The present factory in Sydney will be retained for the production of spare parts. Mr. E. Beaumont, production director of the Lockheed factories in Leamington, is to supervise and plan this new project.

## SOCIAL AND PERSONAL

### Death of Sir Alexander Gibb

We deeply regret to record the death, at the age of 85, of Sir Alexander Gibb, G.B.E., C.B., F.R.S. Gaining early experience with his father's contracting firm, Easton Gibb and Son, Limited, he carried out work on railways ranging from the West Highland to the White-chapel and Bow (London's last cut-and-cover shallow underground line). His work for the Admiralty at Rosyth was remarkable; after the outbreak of war in 1914 he joined the Royal Engineers, becoming Chief Engineer (Port Construction) to the British Armies in France and Belgium. In 1918 he was appointed Civil Engineer-in-Chief to the Admiralty and in 1919 he became Director-General of Civil Engineering, Ministry of Transport. Two years later he set up in practice as a consulting engineer; at that time he was also chairman of the Technical Committee on London Traffic and the Light Railways Investigation Committee. Sir Alexander, knighted in 1918, was a past-president of the Institution of Civil Engineers and of the Institution of Chemical Engineers. He served as president of the Institute of Transport in 1937-38.

The Institution of Naval Architects will hold a summer meeting in Paris from June 30 to July 4.

Mr. Warren Lee Pierson, chairman of the board of T.W.A. since 1947, has been made acting president of the company.

Mr. B. Brewster Jennings, chairman of the board of the Socony Mobil Oil Co., Incorporated, and chief executive officer of the company, retires on January 31. Mr. A. L. Nickerson, president of the company, will become chief executive officer and Mr. Fred W. Bartlett chairman of the board.

As already announced, Mr. D. J. Howse, M.Inst.T., retires on January 31 from the position of chief traffic manager, New South Wales Government Railways. He entered the service of the Great Western Railway in England in 1908, but later migrated to Australia, intending to go on the land; the urge of railway service was, however, too strong. He joined the N.S.W. Railways as a porter, served in the Southern and Western districts in various grades for many years and went to Sydney 25 years ago, being appointed to his present position 10 years ago. In 1940 he was seconded to the army and then

went to the Commonwealth Transport Board as director of transport. For two years after the war he was seconded to the Tasmanian Railways where he actually filled the position of general manager during a period of rehabilitation. He was offered the position of commissioner in New South Wales but preferred to deal with traffic operation. He is a member of the Grain Elevator Board, the Interstate Railways Conference (since 1934) and government bodies such as the Secondary Industry Committee and State Wheat Committee.

Mr. A. J. Burton, works director at the Longbridge works and elsewhere, and Mr. T. A. E. Layborn, C.B.E., deputy chairman of C. T. Bowring and Layborn, Limited, insurance brokers, have joined the board of the Austin Motor Co., Limited.

The next annual meeting of the Manager's Section of the Municipal Passenger Transport Association will be held at Leicester on May 21 and 22. The Leicester City Transport Department is the host undertaking to the Association on this occasion. Meetings will be held in the Grand Hotel.

In addition to the Lord Mayor of London, the Minister of Transport and Mr. Frank Cousins, general secretary of the Transport and General Workers Union, have accepted invitations to the banquet and ball of the Metropolitan and South Eastern area of the Road Haulage Association at Grosvenor House, Park Lane, on March 10.

In view of B.M.C. sales developments for Austin and Nuffield products in Africa, Mr. G. S. Tuck, deputy director of export sales for the British Motor Corporation, is assuming responsibility for the Corporation's subsidiaries in South Africa and the Central African Federation, working from Cape Town as director and general manager.

As already recorded, Mr. G. E. Liardet has become chairman and managing director of the recently formed company Simms Motor and Electronics Corporation, Limited, and relinquishes his position as managing director of Simms Motor Units, Limited, though retaining the chairmanship of the board. Mr. J. Ayres succeeds him as managing director of Simms Motor Units.

The engineering division of Simms Motor Units, Limited, has now been divided into three separate sections, each with its respective chief engineer who is directly responsible to the technical director of the company, Mr. C. H. Bradbury. They are: Messrs. T. Paterson, fuel injection division; R. H. Shimwell, electrical division; and K. Youngman, turbocharger division.

No fewer than 500 employees of the Skefko Ball Bearing Co., Limited, Luton, have now completed 25 years service with the company. The 500th employee to achieve this record is Mr. C. H. Pedder, in the automatic turning department, who was presented with a specially inscribed fountain pen and a number of savings certificates by the Mayor of Luton, Alderman S. C. Hayne, at a ceremony on January 6.

The council of the Institute of British Carriage and Automobile Manufacturers has decided to arrange an open essay competition under the Maythorn bequest on the following subject: "Discuss the merits and demerits of present-day vehicle body construction and styling (either private, public service or commercial vehicles), together with a forecast of desirable improvements." First prize is £35 and silver medal, second prize is £25 and bronze medal, third prize is £20 and diploma. Conditions may be had from the secretary at 50 Pall Mall, London, S.W.1. Closing date for entries is June 30.

### B.O.A.C. Deputy Managing Director

A NEW position, that of deputy managing director, has been announced by British Overseas Airways Corporation. Mr. Keith Granville, who fills it with immediate effect, has been commercial director of the undertaking since early 1956 and was previously sales director.

Mr. A. E. Hoare, assistant motive power superintendent, has been appointed mechanical engineering assistant, chief mechanical and electrical engineer's department, Southern Region, B.R.

We record with regret the sudden death of Mr. C. Slymon, sales manager of the friction materials (automotive) division of Small and Parkes, Limited. He was 47.

Mr. E. T. Croker, district traffic superintendent, Gloucester district, Western Division, B.R.S., has been appointed district manager of that district. He joined B.R.S. from H. W. Hawker, Limited, Bristol, and became district traffic superintendent in 1950.

The Association of Municipal Corporations has established a committee to deal with highways and transport matters. Alderman R. Charlton, O.B.E., J.P., of Andover, is chairman and Alderman John Rafferty, chairman of Leeds Corporation Transport Committee, vice-chairman.

Mr. J. Kirkland has been appointed district manager, Southern Scotland, Scottish Division, British Road Services. He served as an Area Road Haulage Officer in the wartime Road Haulage Organisation, was a district traffic superintendent with B.R.S. from 1948 until 1954 and latterly Glasgow branch manager.

Mr. E. V. Dyson, M.I.Mech.E., A.M.I.E.E., A.M.Inst.T., who has been appointed general manager, Huddersfield Department, subject to the approval of the full council and effective upon the forthcoming retirement (in April) of Mr. H. Muscroft, received his early training at Huddersfield from 1924 onwards. In 1936 he was granted 18 months' leave of absence to take up a short-term contract with the Rangoon Electric Tramway and Supply Co., Limited, in Burma, to inaugurate the first fleets of trolleybuses and motor buses to be installed by that company. In 1938 Mr. Dyson was appointed transport maintenance superintendent, South Shields Corporation Transport Department, and in 1941 chief engineer to the Stalybridge, Hyde, Mossley and Dukinfield Joint Transport and Electricity Board. His next post (in 1945) was as rolling stock engineer, Rotherham Corporation Transport Department. Since 1949 he has been general manager and engineer of the Warrington Corporation Transport Department.

Mr. E. V. Dyson

Mr. D. J. Howse

Mr. A. Campbell, a member of the head office staff of Glasgow Corporation Transport Department, has received an appointment as assistant manager to the Singapore Traction Co., Limited.

Mr. A. H. Hird, A.C.G.I., B.Sc., M.I.Mech.E., a director of Vickers-Armstrongs, Limited, and the Metropolitan-Cammell Carriage and Wagon Co., Limited, and chairman of several wholly-owned subsidiaries of Vickers, Limited, has been appointed to the board of the last-named parent company.

Mr. L. A. Sanson has been appointed senior resident representative for D. Napier and Son, Limited, in Canada, responsible for aviation and diesel engine activities. In addition he will represent the guided weapons and aviation equipment divisions of the English Electric Co., Limited.

Mr. D. G. Stokes, director and general sales manager of Leyland Motors, Limited, is leaving on January 27 on a 20,000-mile tour of the Middle East, India and Australasia. As well as maintaining personal contact with Leyland associate companies, branches and agents in these areas, one objective is to make first-hand observation of the integration of service facilities for Leyland, Albion and Scammell vehicles.

ALHAMBRINAL PERMANENT INTERIOR DECORATIVE PANELLING

ALHAMBRINAL ROOF PANELS BODY PANELS SIDE PANELS SEAT BACKS

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## IMPORTANT CONTRACTS

## Early Start on Yorkshire Motorway

SUBJECT to settlement of contract details, the Ministry of Transport and Civil Aviation proposes to accept the tender of John Laing and Son, Limited, for the building of the 53-mile section of the projected London-Yorkshire motorway from what will be the northern end of the new St. Albans bypass to the southern end of the Dunchurch bypass. The largest of its kind ever awarded to one firm, the contract is valued at about £15 million and covers the provision of double 36-ft. carriageways carried over or under other roads, with slip roads to link with the more important of these. At intervals of about 12 miles, service areas comprising filling stations, vehicle parks, restaurants and lavatories are to be provided. Work is due to start in about two months' time and to be completed by November, 1959. Consulting engineers are Sir Owen Williams and partners.

## New Airline Orders

Trans Caribbean Airways, the newest certificated air carrier in the United States, has ordered a 176-passenger Douglas DC8 turbojet air liner for delivery in December, 1960, to join three new DC6A transports already on order with Douglas.

## Itron Fork-Lifts Ordered

Materials Handling Equipment (Great Britain), Limited, has received from the Indian Government Purchasing Mission a contract for the supply of a number of Itron side-operating fork-lift carriers of 3- and 5-ton capacity for use in the Port of Calcutta. A contract has also been received from the Port of Melbourne, Australia.

## More Comets for Belgian Congo

Transkraft, a leading transport organisation in the Belgian Congo, has ordered eight Leyland Comet 100-h.p. diesel lorries for use in the haulage of mails and freight in the mountainous eastern area of the country. Similar Comet lorries in the area are said to be saving 4.15d. per mile in fuel alone compared with petrol-engined vehicles that they have replaced.

## Aveling-Barford Wins Argentine Order

After-sales service and a keen price helped to win for Britain a keenly contested £1 million contract for motor graders and spares to the Argentine. Under the contract, Aveling-Barford, Limited, Grantham, will supply 170 road-building 10-ton motor graders and spare parts and, as part of the firm's efficient service, a team of instructors in operation and maintenance will leave for the Argentine next month to help put the first machines to work on road construction in Buenos Aires.

## C.N.R. Places Large Diesel Orders

Orders for 151 diesel-electric locomotives have been placed by Canadian National Railways, at a cost of \$27,500,000 for delivery in 1958. General Motors Diesel, Limited, London, Ontario, will supply 81 road shunters—55 of 1,200 h.p. and 26 of 1,700 h.p.; Montreal Locomotive Works, Limited, Montreal, will build seven two-unit passenger locomotives, 45 road shunters of 1,800 h.p. and 11 yard shunters of 1,000 h.p. The passenger diesels will go into service on the north shore of the St. Lawrence River east of Montreal.

## Marconi Transmitter for South Africa

An order has been placed with Marconi's Wireless Telegraph Co., Limited, through Marconi (South Africa), Limited, by the South African Posts and Telegraphs Department for a 10-kW high-frequency independent-sideband radio transmitter for the transmitting station at Kliplineval, in the Cape. The transmitter will be used for telephone and telegraphic traffic with the United Kingdom, now carried by a Marconi multiplexer equipment supplied in 1930. An even older Marconi transmitter, which was used to initiate the beam service between London and South Africa in 1927, has been in continual operation for 30 years and is still giving satisfactory service.

## Brazil Buys U.S. Locomotives

The Electro-Motive division of General Motors has received an order from the Brazilian Government for 100 diesel locomotives worth over 15,000,000 dollars, according to company officials. The Brazilian Government financed the transaction through a loan from the U.S. Export-Import Bank. Deliveries are scheduled to begin in May and will be completed in September. At the same time, company officials said Electro-Motive would probably produce fewer locomotives in 1958 than in 1957 due to declining demand from U.S. railroads. According to an official of the AFL-CIO United Auto Workers Union, Electro-Motive had already slowed production schedules and laid off over 1,000 workers in the last quarter of 1957. He added that an additional 800 to 1,000 hourly workers would become redundant during the early months of 1958. Electro-Motive officials refused to comment on the latter statement.

## TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

**February 4—Pakistan.** Supply and Development Department for two diesel-electric or diesel-mechanised MOBILE CRANES on pneumatic tyres. Photocopies of tender documents from Exports Branch, B.O.T., refer to ESB/227/58/ICA.

**February 5 and 7—Vietnam.** International Co-operation Administration for 25 6,000-lb. capacity four-wheeled TRAILER CHASSIS, less tyres, and two 6,000-lb. at 24-in. centres FORK-LIFT TRUCKS, less tyres, one with crane attachment. (ESB/227/58/ICA.)

**February 5 and 7—Vietnam.** International Co-operation Administration for one 24-ton strake-sided LORRY and one four-wheel-drive steel UTILITY VEHICLE (February 5); and four two-wheel-drive STATION WAGONS, four four-wheel-drive STATION WAGONS, 11 3,750-lb. G.V.W. LORRIES and 12 4-ton PICK-UP TRUCKS (February 7), all petrol-engined. Tenders to the Central Purchasing Authority, P.O. Box 280, Saigon. (ESB/244/58/ICA.)

**February 7—Union of South Africa.** South African Railways for one petrol or diesel-engined pneumatic-tyred FORK-LIFT TRUCK, capacity 18,000 lb. at a 24-in. centre and 6,000 lb. at 108-in. centre, with attachment for handling aero engines. Tenders to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. (ESB/749/58/ICA.)

**February 7—Portuguese East Africa.** Municipality of Mozambique for four single-deck STUSES. Specifications are available at the municipal offices for consultation by local agents of United Kingdom firms.

**February 7—Vietnam.** International Co-operation Administration for 17 3-ton LORRIES and two STATION WAGONS. Tender documents and specifications from the Vietnamese Embassy, 12 Victoria Road, London, W.8, quoting invitation numbers 250, 2 and 4-17127.

**February 10—Sudan.** Sudan Railways for the supply of PERMANENT WAY MATERIALS. Details from the Controller of Stores, Sudan Railways, Abbara.

## SHIPPING and SHIPBUILDING

## Southampton Port Service

INAUGURATED by the Minister of Transport on Friday last week, a port information service, with v.h.f. radiotelephone communications and surveillance radar system installed by the Southampton Harbour Board is designed to give maximum supervision of the heavy shipping traffic in the area covered—Southampton Water, the East and West Solent, for five miles from the mainland towards the Isle of Wight and from Hengistbury Head to Chichester harbour. The duty operations officer is given immediate information of the position and movement of all vessels in the port area and approaches. Information is communicated to vessels by means of the radiotelephone. The equipment complies with international standards laid down at The Hague conference a year ago.

A Decca type 32 harbour radar system has been adopted, the radar aerial being sited on Calshot Tower. The complete installation at Calshot, which consists of the Decca harbour surveillance radar and Marconi v.h.f. radiotelephone service, means that Southampton will have the most advanced port operation and information service in the world. Thermionic Products, Limited, has supplied automatic multi-channel tape recording equipment at Calshot, this making Southampton the first complete installation, it is believed, in which manual listening watch has been replaced by multi-channel recording equipment. A Marconi Nautilus v.h.f. transmitter-receiver enabled the *Mauretania* to use the new service and she took part in the inaugural ceremonies when she sailed from the port on Friday.

## South Wales—Dublin Service

FASTER transit for Irish import and export traffic through Swansea and Cardiff is expected with an improved weekly cargo service brought into operation by Coast Lines, Limited, on January 16, with the new motor ship *Cambrian Coast*. The new vessel, of 875 tons deadweight, will load cargo and sail from Swansea every Thursday and Cardiff every Friday, discharging at Dublin on the Monday. The ship will then return direct from Dublin to South Wales to provide a fast and regular weekly sailing in each direction to meet the needs of shippers on both sides of the Irish Sea. The *Cambrian Coast* has a loaded speed of 10 knots. She has two very large hatches measuring 42 ft. by 18 ft. while the hold has a cubic grain capacity of 37,000 ft. The winches are of the latest Armstrong Siddeley air-cooled diesel type with a lifting capacity of three tons.

## Aberdeen Engages Consultants

REDUCED turnover at Aberdeen Harbour has encouraged the Harbour Commissioners to approve the appointment of a firm of business consultants to carry out a survey of the whole activities of the undertaking. In making this decision the Commissioners stress that there is no question of reflection on their own staff. The annual report shows an estimated deficit of £14,915 for 1957-58 unless revenue increases or expenditure is reduced. Since 1945 over £1 million has been spent on development, and facilities are regarded as equal to the traffic involved. Rising costs and the expansion of road transport are factors intervening in this situation but the board is not satisfied that road haulage or lack of facilities are materially influencing the position. Coastwise traffic and imports are increasing but foreign imports and exports are decreasing. It is stated that higher charges levied last June have not yielded the anticipated revenue.

## CONTINENTAL SEA LINKS

(Continued from page 12)

attends to the loading and discharging of H.S.M. vessels, and British Amsterdam Maritime Agencies, Limited, 58 Salthouse Lane, Hull, attending to all commercial matters. The Humber area is well known for its water forwarding facilities, which penetrate many miles inland into Yorkshire, Lincolnshire and Nottinghamshire. Railheads are available adjacent to Western Docks which comprise Humber, Railway, Princes, Albert and Wm. Wright Docks.

The Eastern Docks (King George, Alexandra and Victoria) have full connections with main lines into and out of Hull. On the road haulage side trunk services operate to the main cities and areas. There are full Customs facilities at each dock with transit bonds and there is a great number of warehouses for general cargo storage—also grain—while others have river wharves for cargoes discharged ex ship to craft.

## Strasbourg as Distribution Centre

Many British companies trading with Eastern and South Eastern France do not realise the possibility of handling their traffic to and from these areas via the port of Strasbourg on the River Rhine. As a result, many firms in such areas as Alsace and Lorraine, etc., receive instructions from their clients in the United Kingdom to deliver goods f.o.b. French seaport (for example Dunkirk, Boulogne, Le Havre, Bordeaux, Marseilles), to which ports the goods have to be sent by rail incurring substantial inland transport costs. It would often be much simpler and more economic if the traffic in question was shipped via the port of Strasbourg and the Rhine to Amsterdam, and thereafter by the Holland Steamship Company's regular frequent services to the principal U.K. ports.

The same possibilities exist as regards British exports and shipments can be made by H.S.M. services to Amsterdam, and thence by Rhine steamer to Strasbourg. Geographically, the latter as a centre of international trade, has an economic radius of approximately 200 miles and any traffic to or from places within this range can be handled very economically via the Rhine. Information can be obtained locally at Strasbourg from the Amsterdamsch Vrachtkantoor, S.A.R.L. at Strasbourg (Port du Rhin).

## World-wide Transhipment

Amsterdam has direct connections operated by Netherlands shipowners to all parts of the world and the H.S.M. organisation is able to arrange for traders to ship their goods by any of these lines. In this connection it is of interest to note how each owner has developed his own services to a particular group of ports such as those run by the associated Holland West Africa Lijn N.V. (H.W.A.L.) to British and French West Africa, Liberia, French Equatorial Africa, Belgian Congo and Angola.

## Humber's greatest Hawk

## Fine bodywork welded by Saturn-Hivolt

## Surge Injector Welding Units



Notable always for the highest standard of bodywork, Humber recently announced their greatest 'Hawk'. In this, as in many previous models, Saturn-Hivolt Surge Injector Welding equipment and Saturn

Argon are used for many of the important welding operations. Saturn cutting and welding equipment has, for many years, played a big part in industry. The new Saturn-Hivolt Argon Arc Welding Machines offer the finest welding of aluminium and its alloys and stainless steel. Let us show you the complete range supplied and maintained from our many branches throughout the country.

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## Resiliency

The severe shocks imposed upon gears when rail points or crossings are traversed at high speeds require the design to be more exacting than normal industrial gears. Gears, like the rubber resilient type illustrated, protect motor armatures against impact shocks and vibration, thus lengthening the life of the traction motor.



## Resilient METROVICK TRACTION GEARS

Large numbers of these gears have been supplied to leading railways, and are operating with reliability and efficiency.

## METROPOLITAN-VICKERS

ELECTRICAL CO. LTD. TRAFFORD PARK, MANCHESTER 17

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## Metrovick Gears for Traction Service

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